# CCD-F35/F36/F280

# SERVICE MANUAL

US Model
CCD-F35/F36
Canadian Model
CCD-F35
E Model
CCD-F280

PHOTO : CCD-F35

Handycam
Video 8
U MECHANISM

## SPECIFICATIONS

**System**

| | |
|---|---|
| Video recording system | Rotary two heads, Helical scanning FM system |
| Audio recording system | Rotary head, FM system |
| Video signal | NTSC color, EIA standards |
| Usable cassette | 8 mm video format cassette |
| Tape speed | SP: Approx. 1.43 cm/sec.<br>LP: Approx. 0.72 cm/sec. (playback only) |
| Recording time | SP mode: 2 hours (P6 – 120) |
| Playback time | SP mode: 2 hours<br>LP mode: 4 hours (P6 – 120) |
| Fast forward/rewind time | Approx. 6.5 min. (P6 – 120) |
| Image device | CCD (Charge Coupled Device) |
| Viewfinder | Electronic viewfinder (black and white) |
| Lens | Combined 6 × power zoom lens<br>f = 9 – 54 mm, F1.4 with macro<br>Filter diameter: 46 mm |
| Auto focus system | TTL |
| Color temperature | AUTO<br>HOLD<br>INDOOR 3,200 K<br>OUTDOOR 5,800 K |
| Minimum illumination | 5 lux |
| Illumination range | 5 lux–100,000 lux (0.8–9,294 footcandles) |
| Recommended illumination | More than 300 lux (28 footcandles) |
| Aperture correction | Automatic<br>Back light adjustment |

**Input and output connector**

| | |
|---|---|
| Video output | Phono jack, 1 Vp-p, 75 ohms unbalanced sync negative |
| Audio output | Phono jack, –7.5 dBs, at output impedance less than 2.2 kilohms |
| RFU DC OUT | Special minijack, 5V DC |
| Video input | Phono jack, 1 Vp-p, 75 ohms unbalanced, sync negative |
| Audio input | Phono jack, –7.5 dBs, input impedance more than 47 kilohms |
| Earphone jack | Minijack, 8-ohm impedance |
| Remote jack | Stereo mini-minijack |
| MIC jack | Minijack, –66 dBs, low impedance<br>With 2.5–3 V DC output, impedance 6.8 kilohms |
| Microphone power output jack | Special minijack, 5 V DC |

— Continued on next page —

MICROFILM

## 8 VIDEO CAMERA RECORDER

SONY®

**Display in the viewfinder**

Mode and caution indicators
Caution: ⊗/⏏/🌢/⌧/▭
Mode: REC/STBY/PAUSE/
►, ◄ (Editsearch)/
⏩/⏪/STILL/PLAY/
►►/◄◄/SLOW/▮▮►
LP mode, AM/PM, FOCUS,
▨, WHITE BALANCE, ZERO
MEM, shutter speed
Recording/battery lamp

**General**

| | |
|---|---|
| Power requirements | Battery compartment<br>6.0 V (battery pack)/7.5 V (AC power adaptor)/9.0 V (EBP-55) |
| Power consumption | 6.9 W (camera recording) including the viewfinder |
| Installation | Vertically, horizontally |
| Operating temperature | 0°C to 40°C (32°F to 104°F) |
| Storage temperature | −20°C to +60°C (−4°F to +140°F) |
| Dimensions | Approx. 122 × 153 × 312 mm (w/h/d)<br>($4\frac{7}{8} \times 6\frac{1}{8} \times 12\frac{3}{8}$ in.)<br>including lens hood |
| Weight | Approx. 1.2 kg (2 lb 10 oz) excluding the battery and cassette |
| Microphone | Electret condenser microphone, omni-directional monaural type |
| Supplied accessories | Battery pack NP-55 (1)<br>AC power adaptor AC-V30 (1)<br>RFU adaptor RFU-89UCA (1)<br>Antenna selector (1)<br>Lithium battery CR2025 (1) |

Design and specifications are subject to change without notice.

## SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

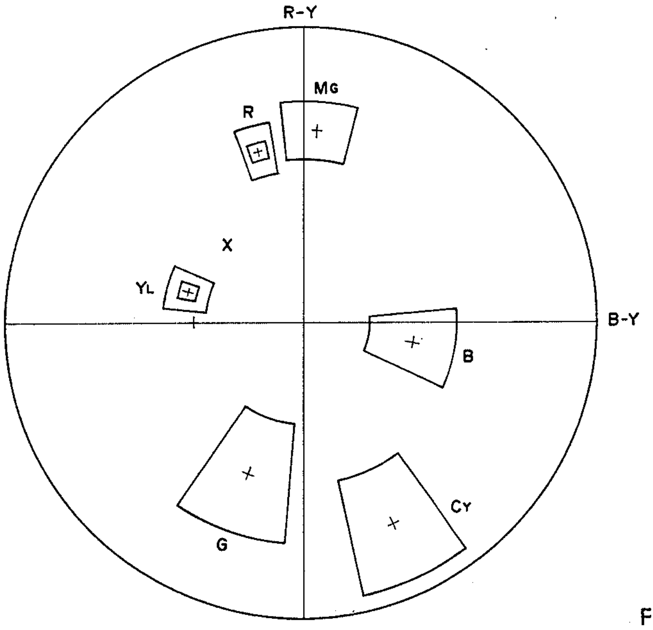
1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

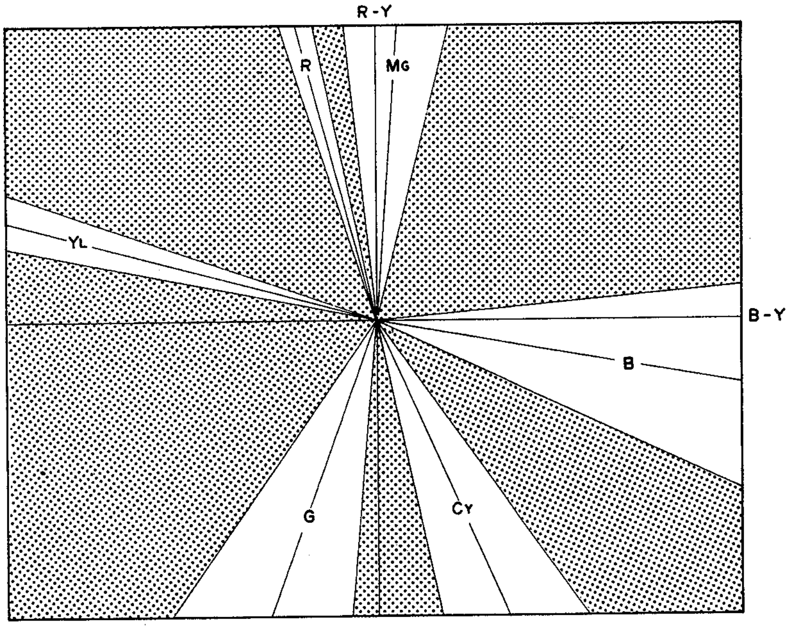
COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.


R-Y
MG
R
X
YL
B-Y
B
G
CY

For Vectorscope


R-Y
R
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For Oscilloscope

CCD-F35

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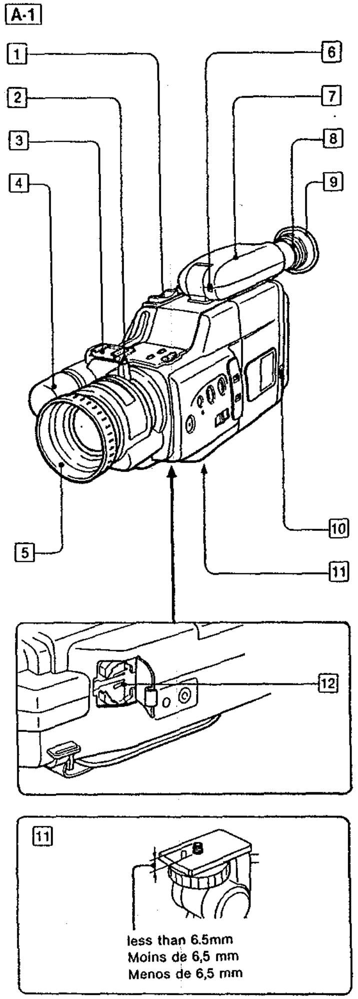
The color reproduction standard frame is contained after the adjustment element location of camera adjustment parts.

# SECTION 1
# GENERAL

This section is extracted from instruction manual.

## Location and Function of Parts and Controls



For details on the use of each control, refer to the pages indicated in the circle.

A-1

1 **Power zoom button** (52)

2 **Zoom lever and Macro button** (52) (54)

3 **Accessory shoe**
Attach an external microphone video light, etc.

4 **Built-in microphone (monaural)**

5 **Lens hood**
Also functions as focus ring.

6 **Camera recording/battery lamp**
Lights during camera recording. It blinks when the battery is exhausted.

7 **Viewfinder** ㉞
The picture being recorded or played back can be monitored in monochrome here. Also, data such as caution indicators and function mode are displayed on the viewfinder screen.

8 **Viewfinder lens adjustment ring** ㉖
Adjust to your eyesight to assure good focus. Be sure to adjust this ring when shooting for the first time.

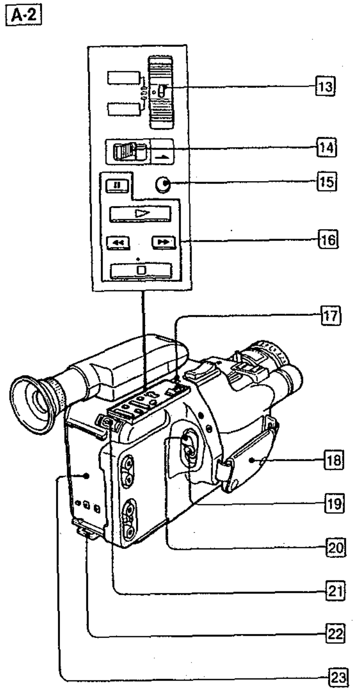
9 **Eyecup**

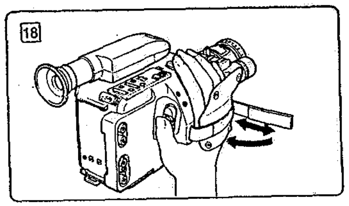
10 **BATT (battery eject) knob** ⑯

11 **Tripod receptacle (rear)**

12 **Lithium battery compartment** ㉒

**Note when attaching a tripod not manufactured by Sony**
When attaching a tripod not manufactured by Sony, the length of the camera mounting screw must be less than 6.5mm.
Otherwise the screw may damage the inner parts of the camera.





## Location and Function of Parts and Controls

A-2

13 **POWER switch**
CAMERA: For camera recording
VTR: For playing back or editing tapes
OFF: Power off

14 **● REC (recording) switch** (80)
Slide in the direction of the arrow.

15 **DATA SCREEN button** (70)
Press to display the indication on the viewfinder screen on the TV.

16 **Tape transport buttons**
▷ (playback)
▶▶ FF (fast forward)
◀◀ REW (rewind)
□ (stop)
❚❚ (pause)

17 **EDIT switch** (84)
Normally set it to the OFF position. When editing tapes, set in the direction of the arrow (ON).

18 **Grip strap**
Adjust the length so that your thumb can easily manipulate the START/STOP button.

19 **START/STOP button**
Press to start and stop camera recording.

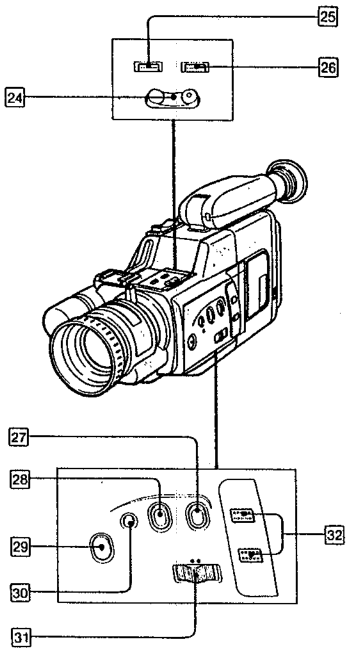
20 **STANDBY switch**
Slide up to STANDBY to set the unit to recording pause mode.

21 **EJECT (cassette eject) button** ㉔

22 **Hook for shoulder strap**
Attach a shoulder strap.

23 **Battery mounting surface**

A-3



## Location and Function of Parts and Controls

A-3

**24 EDITSEARCH (and recording review) button ㊱ (60)**

**25 ZERO MEM (zero memory) button (60) (80) (82)**
Used to memorize the counter zero point.

**26 COUNTER RESET button (60) (80) (82)**
Press to reset the counter to zero.

**27 SHUTTER SPEED button ㊽**
Used to select the shutter speed.

**28 FOCUS button ㊵**
Used for manual focusing.

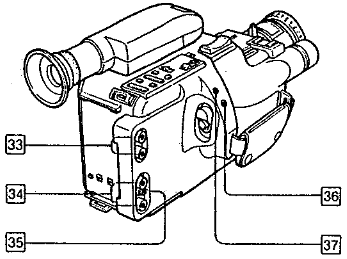
**29 BACK LIGHT button ㊻**

**30 WHITE BAL (white balance) button ㊹**
Used for manual white balance adjustment.

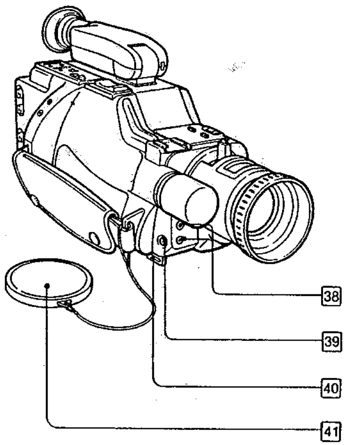
**31 AUTO LOCK switch ㉘**
Normally set to the AUTO LOCK position (green mark).
To adjust the focus, white balance, iris or shutter speed manually, set to the right position (white mark).

**32 DATE and TIME (NEXT) buttons (56)**
Press to display or turn off the date or time.

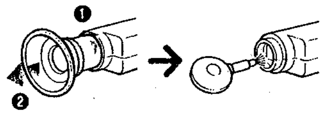
A-4



A-5



A-6



## Location and Function of Parts and Controls

A-4

**33 VIDEO/AUDIO IN (input) jacks (phono jacks)**

**34 VIDEO/AUDIO OUT (output) jacks (phono jacks)**

**35 RFU DC OUT (RFU adaptor DC output) jack (special minijack)**
Supplies power to the RFU adaptor.

**36 🎧 (earphone) jack (minijack)**

**37 REMOTE connector (stereo mini-minijack)**
Connect an optional GP-80 Remote Commander or wired Remote Commander RM-95 (available in near future).
Do not connect other equipment.

A-5

**38 MIC jack and DC OUT (microphone power output) jack**
Connect an external microphone.
The MIC jack accepts Sony "plug-in-power" microphones and supplies power to them.

**39 REC START/STOP button for low angle**

**40 Hook for shoulder strap**
Attach a shoulder strap.

**41 Lens cap**

**To remove dust from inside the viewfinder A-6**
Detach the eyecup as illustrated and clean the surface of the cathode ray tube with a blower.

# Power Sources

## Selection of Power Sources

This manual shows the operations on one of the following power sources.

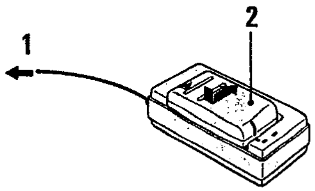
| Place | Power source | Accessory to be used |
|---|---|---|
| Indoors | House current | AC power adaptor<br>AC-V30 or AC-V55<br>(page 16) |
| Outdoors | Battery pack | Battery pack<br>NP-55 or NP-77<br>(page 16)<br>Battery case EBP-55<br>(page 18) |
| In the car | 12 V or 24 V car battery | DC pack DCP-55<br>(page 20)<br>(DCC-16B car battery cord supplied) |

**Notes on power source**

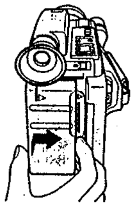
- Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted cassette tape. If this is done by accident, supply the power again immediately and turn on the power switch.
- Be careful not to let any metal object touched on the metal part on the battery pack or AC power adaptor. When the battery pack is not to be used, keep it in its case.

**Optional Accessories for Charging**
- AC-V55 AC power adaptor
  Two battery packs can be charged simultaneously.
- BCA-70 or BCA-80 battery charge adaptor, ACP-88 AC pack and NPA-55 battery adaptor
  For charging, insert an NP-55 into the NPA-55.

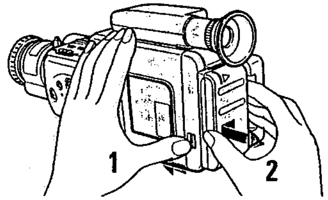
B-1



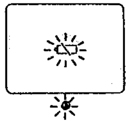
B-2



B-3



B-4



## Battery Pack — NP-55 or NP-77

**First, charge the battery pack.** B-1
Use the AC-V30 AC power adaptor.
The charging time is about 1 hour for an NP-55 battery pack, or about 2 hours for an NP-77 battery pack.

1 Connect the AC-V30 to a wall outlet.
2 Attach the battery pack to the AC-V30.
  Align the grooves on the battery pack with those on the AC-V30, and while pressing the battery pack, slide it as illustrated.

**To attach the battery pack to the video camera recorder** B-2
Align the right side of the battery pack with the line on the recorder, and while pressing the battery pack, slide it to the right.
Make sure that the battery is fitted completely to the mounting surface. Imperfect fit may damage the projections on the recorder.

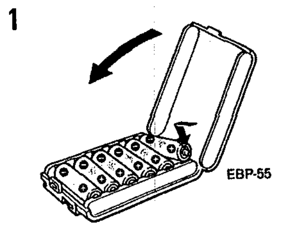
**To remove the battery pack** B-3
While pressing the BATT knob in the arrow direction, slide and pull out the battery pack as illustrated.

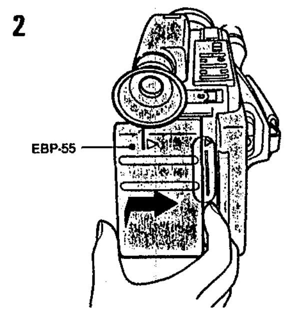
**Battery life**
A fully-charged NP-55 battery pack provides approximately 40 minutes of continuous camera recording, and an NP-77 provides approximately 80 minutes of continuous camera recording.

When the video camera recorder is not in use, remove the battery pack.
If the battery is installed, even if the POWER switch is set to OFF, a very small amount of electric current flows.

**When the battery becomes weak** B-4
The ▭ indication and red lamp blink in the viewfinder.
Replace the battery pack with the fully charged one.

B-5





## Power Sources

**Notes**

- The video camera recorder consumes power even in the recording pause mode. When recording short scenes using the recording pause mode, the battery life is less than half that of continuous recording.
  When recording is not to be started soon, turn off the power with the STANDBY switch.
- If the battery pack is not fully charged or if it is used in a cold place, its operating time is also shortened.

**Using the NP-22 battery pack**
A fully-charged NP-22 battery pack can operate this unit for approximately 60 minutes. For using the NP-22, an optionall NPA-22 battery adaptor is necessary.

## Battery Case EBP-55 B-5

1 Insert the six R6 (size AA) alkaline batteries into the battery case.
2 Align the right side of the battery case with the line on the recorder, and while pressing the battery case, slide it to the right.

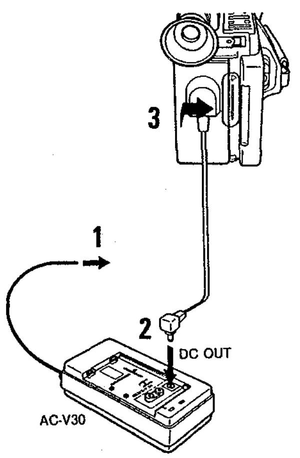
**To remove the battery case**
While pressing the BATT knob on the recorder, slide and pull out the battery case.

**Battery life**
With fully-charged batteries, the battery case provides approximately 40 minutes of continuous camera recording when used indoors.

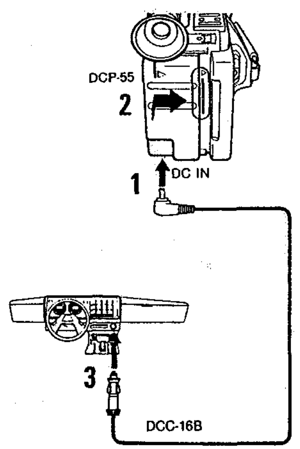
**Notes on the battery case**

- Be sure to use the alkaline batteries.
- The battery case cannot be used in a cold place.
- The ⌫ indication may not blink when the batteries in the battery case become weak, as the voltage of the battery lowers suddenly. If the cassette compartment does not open, replace the batteries.

B-6



B-7



## Power Sources

## House Current — Using AC Power Adaptor B-6

1 Connect the AC power adaptor to a wall outlet.
2 Insert the connecting cord supplied with the AC-V30 AC power adaptor into the DC OUT jack on the AC power adaptor.
3 Align the right side of the connecting plate with the line on the recorder, and while pressing the connecting plate, slide it to the right.

**To remove the connecting plate for the AC power adaptor from the video camera recorder**
While pressing the BATT knob on the recorder, slide and pull out the connecting plate.

The optional AC-V55 AC power adaptor can also be used to operate this recorder on house current.

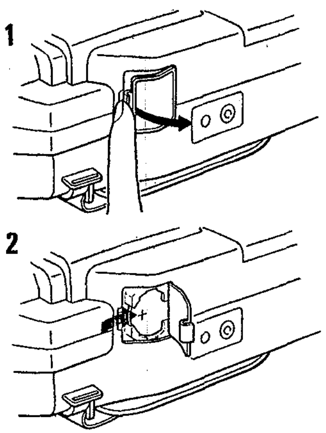
## Car Battery — Using the DC Pack B-7

1 Insert the DCC-16B car battery cord supplied with the DCP-55 DC pack into the DC IN jack on the DC pack.
2 Align the right side of the DC pack with the line on the recorder, and while pressing the DC pack, slide it to the right.
3 Connect the DCC-16B car battery cord to the cigarette lighter socket of a car (12 V or 24 V).

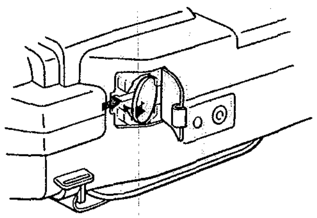
**To remove the DC pack from the video camera recorder**
While pressing the BATT knob on the recorder, slide and pull out the DC pack.

The optional AC-V55 AC power adaptor and the DCC-16AW car battery cord can also be used to operate this recorder on a 12V or 24V car battery.

C-1



C-2



# Power Sources

## Lithium Battery C-1

**To insert the lithium battery**
This unit uses a lithium battery to activate the clock. Before operating the unit for the first time, install the supplied lithium battery:

1 Open the cover of the lithium battery compartment on the bottom.
2 Install the supplied CR2025 lithium battery with the ⊕ side facing out.
3 Close the cover.

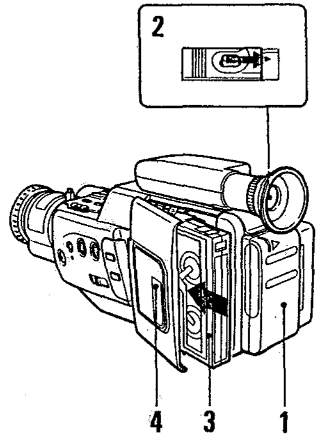
**To remove the lithium battery** C-2
Press the side of the battery in the direction as indicated for installation.

**Lithium battery life**
Approximately 1 year in normal operation.
When the lithium battery becomes weak, the time indication will blink on the viewfinder screen for about 5 seconds.
In this case, replace the battery with a Sony CR2025 or Duracell DL-2025 lithium battery.
Use of another battery may present a risk of fire or explosion.
After replacing the battery, readjust the date and time. (If the battery is replaced with the battery pack attached, the readjustments are not necessary.)

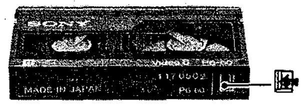
**Notes on lithium battery**
- Keep the lithium battery out of the reach of children.
  Should the battery be swallowed, immediately consult a doctor.
- Wipe the battery with a dry cloth to assure a good contact.
- Be sure to observe the correct polarity when installing the battery.
- Do not hold the battery with metallic tweezers, otherwise a short-circuit may occur.
- Do not break up the battery nor throw it into a fire, which might cause it to explode. Carefully dispose of the used batteries.

**WARNING**
Battery may explode if mistreated.
Do not recharge, disassemble or dispose of in fire.

D-1



D-2



# Cassette Care

## Cassette Insertion D-1

1 Connect a power source.
2 Slide the EJECT button while pressing the center blue button.
The lid of the cassette compartment will open.
3 Insert a cassette with the window facing outside.
4 Press the PUSH mark to close the cassette holder.

## Cassette Ejection

1 Make sure that a power source is connected.
2 Slide the EJECT button while pressing the center blue button.
3 Take out the cassette and press the PUSH mark to close the cassette holder.

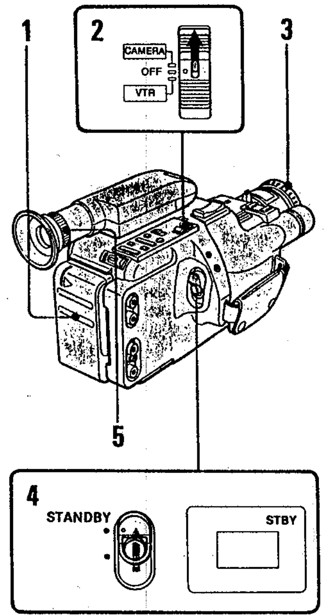
## To Prevent Accidental Erasure D-2

Slide out the tab on the cassette so that it covers the opening. (A red mark will appear.)

To re-record on the cassette, slide the tab in to uncover the opening.

**Notes**
- Don't press the lid of the cassette compartment forcibly when it is moving.
- When inserting or removing the cassette, stand the unit upright. Otherwise, the cassette may be damaged.
- Never insert anything in the small holes on the rear of the cassette. These holes are used to sense the kind of tape, thickness of tape, or if the tab is out or in, etc.
- To record from the beginning of the tape, run the video camera recorder for about 15 seconds at the beginning of a cassette before recording. It will avoid missing the starting point during playback on a video cassette recorder.

E



**Camera Operation**

## Adjustment of the Viewfinder Lens

The position of the viewfinder lens for optimum vision varies depending on the person. E

1 Connect a power source.
2 While pressing the small button, set the POWER switch to CAMERA.
3 Remove the lens cap.
4 Slide the STANDBY switch up.
5 Turn the viewfinder lens adjustment ring so that the indicator displayed on the viewfinder screen comes into sharp focus.

Adjustment of the viewfinder lens is necessary only for your initial use, or for use after someone else.

**Note**

If you leave the unit in the recording pause mode for 5 minutes or more, the unit will be automatically turned off. To resume recording pause mode, slide the STANDBY switch down once and slide it up again. To start recording, press the START/STOP button.

## Selection of the Automatic or Manual Adjustments

When the AUTO LOCK switch is set to AUTO LOCK (green mark), the white balance, shutter speed (1/60), focus and iris are adjusted automatically. But under certain circumstances, manual adjustment is better for effective recording.

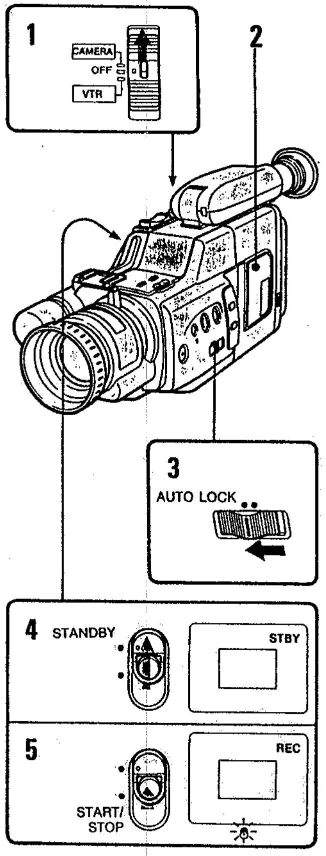
When the AUTO LOCK switch is set to the right position (white mark), each manual function works as follows.

| | |
|---|---|
| Each push of the button cyclically changes each function and the indication on the viewfinder changes. | |
| WHITE BALANCE<br>See page 42. | No indication → HOLD → ☀ → △<br>(Auto) |
| SHUTTER SPEED<br>See page 48. | No indication → 100 → 250 → 1000 → 2000 → 4000<br>(1/60) (1/100)(1/250)(1/1000)(1/2000)(1/4000) |
| FOCUS<br>See page 38. | Auto focusing zone → ■<br>(Auto) (Manual) |
| BACK LIGHT<br>See page 46. | No indication → ▨<br>(Back light) |

**Notes**

- Just after the battery pack is attached to the recorder, even if the AUTO LOCK switch is set to the right position, the AUTO LOCK function will work.
- If the AUTO LOCK switch is set to AUTO LOCK after each function is adjusted manually, and then set to the right position again, the previous manual setting willl be recalled.

F-1



## Easy Camera Recording with Automatic Adjustment

### How to Record

F-1

1 While pressing the small button, set the POWER switch to CAMERA.
2 Insert the cassette.
3 Set the AUTO LOCK switch to AUTO LOCK (green position).
4 Slide the STANDBY switch up.
The unit will enter the recording pause mode.
5 Press the START/STOP button.
Recording will start.

**Check on the viewfinder screen**
STBY: Displayed during recording pause mode.
REC: Displayed during recording.

**To stop recording**
Press the START/STOP button again.
The unit will enter the recording pause mode. Avoid rough handling or mechanical shock to the unit. A smooth transition between scenes may not be made.

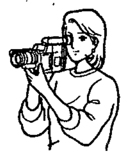
**To check the last portion of the previous recording (Recording review)**
1 Set the recorder in recording pause mode by pressing the START/STOP button.
2 Press the – EDITSEARCH button momentarily.

The last few seconds of the recorded portion are rewound and then the recorded picture is monitored on the viewfinder screen. The unit then enters the recording pause mode.

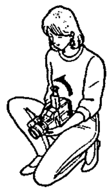
**If the picture has not been recorded**
The video head may be contaminated. Clean the heads using the Sony V8-25CL video head cleaning cassette.

**After using**
Slide the STANDBY switch down and set the POWER switch to OFF. (You need not press the center button when setting the switch to OFF.)

F-2



F-3



**Hold the camera recorder as in the illustration.** If your nose touches the recorder, adjust the angle of the viewfinder. F-2

F-3

**For low angle recording**
The viewfinder can be turned 90 degrees up.
1 Slide the STANDBY switch up.
2 Press the START/STOP button for low angle on the right front.

**Note on power source**
If the POWER switch is moved during recording, the tape will stop.

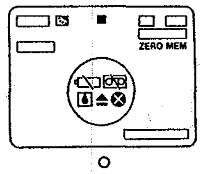
**Notes on light sources**
- Should you shoot a subject in bright conditions such as sunlight just after shooting in a dark place, the picture may not appear on the viewfinder screen. In this case, move the camera away from the subject to resume the normal condition.
- A vertical band may appear when a subject such as a candle flame or a light is shot against a dark background.

**Notes on playback on another VCR**
- To view the picture which has been recorded on this unit, set the monitor switch of the recorder for playback to the STD (standard) position.
- When recording on this unit using a tape on which PCM stereo sound has previously been recorded, set the monitor switch of the video cassette recorder for playback to the STD (standard) position. Otherwise, the sound may not be heard or may be distorted.

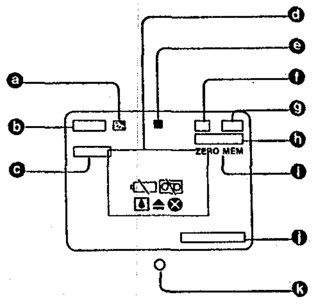
**Notes on automatic adjustment**
- During recording with auto focusing, do not turn or stop the focus ring (lens hood) forcibly.
- Keep the lens clean.

The camera recording with automatic adjustment may not produce optimum results under certain conditions. In this case, manually adjust the focus, white balance, back light and shutter speed. See pages 38, 42, 46 and 48.

F-4



F-5



## Easy Camera Recording with Automatic Adjustment

### Indications inside the Viewfinder

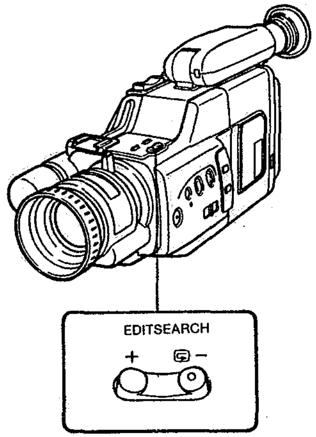
**Indications for caution** F-4

| | |
|---|---|
| 🔋 | Slow blinking<br>• The battery is weak.<br>Fast blinking<br>• The battery is exhausted. |
| 📼 | Slow blinking<br>• No cassette is inserted.<br>• The tab on the cassette is out (red).<br>Fast blinking<br>• The tape is at its end. |
| ⏏ | Blinking<br>• A fault has occurred in the unit. See page 122. |
| ⊗ | Blinking<br>• The gap of the video head is clogged. (Head contamination) See page 122. |
| 💧 | Blinking<br>• Moisture has condensed inside the unit. |

**Indications for showing the function in use** F-5

| | |
|---|---|
| ⓐ | The back light function has been activated. |
| ⓑ | Indicates the white balance mode. |
| ⓒ | Indicates the shutter speed. |
| ⓓ | Indicates the auto focusing zone. |
| ⓔ | • Lights when the focus function has been set to manual.<br>• Blinks when the auto focus function may not work correctly due to low light or low contrast. See page 38. |
| ⓕ | Indicates the playback mode (LP). |
| ⓖ | In the VTR operation mode, this indicates the tape transport function. |
| ⓗ | Indicates the tape counter. |
| ⓘ ZERO MEM | Blinks when the ZERO MEM button has been pressed. |
| ⓙ | Indicates the date or time. |
| ⓚ | • Lights in red during recording.<br>• Blinks when the battery is weak. |

F-6



## Easy Camera Recording with Automatic Adjustment

### Instant Playback on the Spot F-6

You can monitor the picture just recorded on the viewfinder screen.

1 While pressing the small button, set the POWER switch to CAMERA.
2 Slide the STANDBY switch up.
3 Press the "–" side of the EDITSEARCH button to view the playback picture in reverse.
4 Press the "+" side of the EDITSEARCH button to view the playback picture.

### During Recording, to Record Again on the Previous Recorded Portion (Editsearch 1)

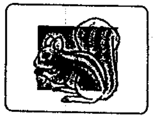
1 Slide the STANDBY switch up.
2 Monitor the picture on the viewfinder screen and locate the point from which the recording is to begin again with the EDITSEARCH button.
Press the "+" side of the EDITSEARCH button to advance the picture at a normal playback speed, or the "–" side to reverse the picture.
3 At the desired point, release the EDITSEARCH button.
The unit will be set to recording pause mode.
4 Press the START/STOP button to start recording.

Smooth recording can be made even if the recording is stopped and started again, or even if the power is turned off and on again, provided that the cassette is not removed. But, if the cassette has been removed, proceed as above.

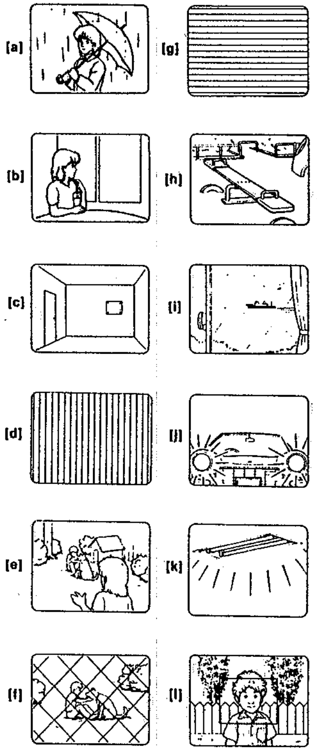
**To monitor the sound while viewing the playback picture on the viewfinder screen**
Connect an earphone to the ⑨ jack.
1 While pressing the small button, set the POWER switch to VTR.
2 Press the ◀◀ button to rewind the tape.
3 Press the ☐ button to stop the tape.
4 Press the ▷ button to start playback.

**To stop the playback, press the ☐ button.**

G-1



G-2



## Manual Focusing

When the AUTO LOCK switch is set to AUTO LOCK, correct focusing is obtained in most cases if the subject is displayed in the auto focusing zone (illustrated in blue). G-1
Use manual focusing when shooting subjects difficult to focus automatically.

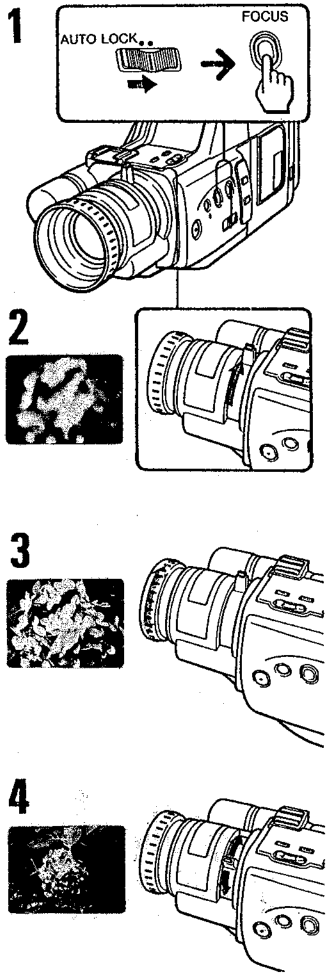
### Poor Conditions for Auto Focusing G-2

[a] Insufficient light
[b] Too much bright light behind the subject
[c] Subjects with flat colors and less contrast — wall, sky, etc.
[d] Finely detailed repetitive patterns
[e] When the distance between subjects at the center is extreme (e.g. one subject is close, the other is away)
[f] Subjects beyond screens, nets, etc. or when another subject passes across the camera
[g] Horizontal stripes
[h] Diagonal object
[i] When there is frosted glass between the shooting object and the recorder
[j] Bright object or object reflecting light
[k] When shooting under a fluorescent lamp at the shutter speed set to 1/250, 1/1000, 1/2000 or 1/4000
[l] When there is a high contrast background within the auto focusing zone (The back ground may be focused.)

### Other Uses of Manual Focusing

- When the white mark inside the viewfinder blinks
- When using special effects lenses or filters
- When shooting still subjects on a tripod
- To save battery wear
(When the AUTO LOCK switch is set to AUTO LOCK, the auto focusing operates to move the focus ring automatically even in recording pause mode. This causes the battery to wear continuously.)
- For focusing in close-up shooting, see page 54.

G-3



## Manual Focusing

**Notes**
Since the auto focusing system of this unit detects the contrast of the video signal for accurate focusing, it does not function momentarily in these cases:
- When the shutter speed or the white balance is changed
- When the back light is being adjusted
- When lighting conditions change quickly
- When the zooming is changed from wide-angle to telephoto

It may take several seconds to get focus when the camera is rapidly panned from a distant subject to a near subject with less contrast. In this case, adjust the focus manually.

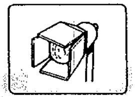
**Note on automatic adjustment**
During recording with auto focusing, do not turn or stop the focus ring forcibly.

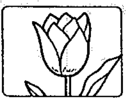
### To Focus Manually G-3

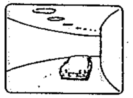
1 Set the AUTO LOCK switch to the right position and press the FOCUS button.
The white mark (■) will be shown in the viewfinder.
2 Turn the manual zoom lever to the telephoto position (72) to make the subject as large as possible in the viewfinder.
3 Turn the lens hood (focus ring) to achieve sharp focus.
4 Set the desired shot length using the manual zoom lever.

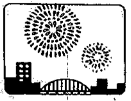
**Some helpful hints**
- When shooting a scene with lots of movement in bright light, the subject can be kept in good focus by setting the zoom lever to the wide-angle position and the focus ring to 2 m, regardless of the distance between the subject and the recorder.
- When shooting in low light situations such as indoors, the depth of field in proper focus is very shallow. For best results, shoot at wide angles, after focusing in telephoto.
- The figures on the focus ring indicate the distance between the subject and the lens surface.
- Recommended illumination of this unit is more than 300 lux (28 footcandles). If shooting is done indoors or under other circumstances where light is insufficient, video lights must be used for best results. Under adequate light condition, the depth of field in proper focus is wider and a sharper picture will be recorded.

H









# Manual White Balance Adjustment

When the AUTO LOCK switch is set to AUTO LOCK, the auto white balance function of this unit operates automatically in most cases. However, if it does not work correctly in the conditions listed below, adjust the white balance manually.

## Difficult Conditions for Auto White Balance H

| | | |
|---|---|---|
| [a] | When lighting conditions change quickly | ☆ |
| [b] | When the light source for the subject is different from that illuminating this unit, such as when the subject is in a spotlight, etc. | ☆ |
| [c] | When shooting a monochromatic subject or the background is monochromatic | HOLD |
| [d] | When recording under a sodium lamp | ☆ |
| | When recording under a mercury lamp | ☆ |
| | When recording under a color matching fluorescent lamp | ✳ |
| [e] | When recording outdoors, such as a night view, neon sign or fireworks | ✳ |
| [f] | When recording outdoors, such as scenes after sunset or scenes before sunrise. | ✳ |

## Manual White Balance Adjustment

### To Adjust the White Balance Manually

1 While pressing the small button, set the POWER switch to CAMERA.
2 Set the AUTO LOCK switch to the right position.
3 Select the desired white balance mode by pressing the WHITE BAL button. Each push of the WHITE BAL button cyclically changes the indication inside the viewfinder.

No indication (Auto) → HOLD → ✳ → ☆ → (back to start)

For the color temperature and the white balance adjustment, see page 92.

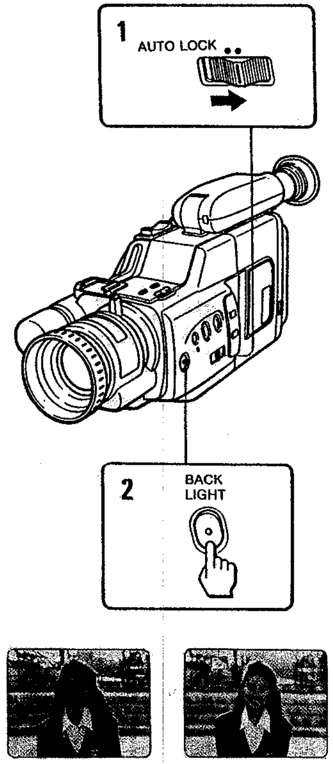
**To adjust the white balance precisely**

1 Set the WHITE BAL button to auto mode (no indication).
2 Point the recorder to a white, flat object such as a white wall, paper, etc.
3 Press the WHITE BAL button to indicate the HOLD mark inside the viewfinder. The correct white balance is memorized.

**Notes**

- When the power is turned off or the light source is changed, reset the HOLD mode again.
- The white balance is related to back light and shutter speed adjustment. When the shutter speed is adjusted manually, if the recorder is moved indoor to outdoor or vice versa, set the AUTO LOCK switch to AUTO LOCK and reset it to the right position again.
- When the recorder has been moved indoor to outdoor, or vice versa, slide the STANDBY switch up and point the recorder to a white object for about 15 seconds so that the white balance is adjusted properly.

I



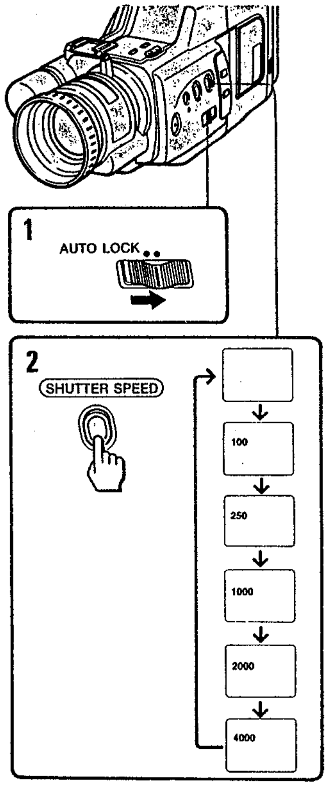
## Back Light Adjustment ▣

This unit adjusts the iris automatically. However, when shooting a subject that is backlit, set the AUTO LOCK switch to the right position and press the BACK LIGHT button. The ▣ indication appears when the BACK LIGHT button has been pressed.

After shooting that particular scene, be sure to press the BACK LIGHT button again to release it. Otherwise the recorded picture will be too bright.

**Note**
The function will be released once the POWER switch is set to OFF.

J



## Shutter Speed Adjustment

When a fast-moving subject is recorded at a normal shutter speed, the picture may not be seen clearly when played back. This can be improved by increasing the shutter speed.
The shutter speed of this unit can be selected from six speeds, 1/60 (normal speed), 1/100, 1/250, 1/1000, 1/2000 or 1/4000 second.
However, when the shutter moves fast, it will not allow enough light to come into the lens, so the picture will be dark. Therefore, when recording at a high shutter speed, record in a brighter place than usual.
Choose an appropriate shutter speed according to the place and situation.
See the chart below for examples.

| Example use | Recommended shutter speed |
|---|---|
| • On clear days, recording golf or tennis scenes (To view the hit ball clearly in the pause mode, set to 1/4000)<br>• Recording the skiers | 1/4000 or 1/2000 |
| • On overcast days, recording a moving merry-go-round or jet-coaster<br>• Recording outdoors from inside a vehicle (for stable shooting) | 1/1000 or 1/250 |
| • Instead of the ND2 filter (To reduce the exposure level to approx. 1/2)<br>• Recording indoors (for stable shooting) | 1/100 |

J

1 Set the AUTO LOCK switch to the right position.
2 Press the SHUTTER SPEED button repeatedly until the desired shutter speed inndication appears on the viewfinder screen.
Each time the SHUTTER SPEED button is pressed, the indication changes:
No indication → 100 → 250 → 1000 → 2000 → 4000
(1/60) (1/100)(1/250)(1/1000)(1/2000)(1/4000)

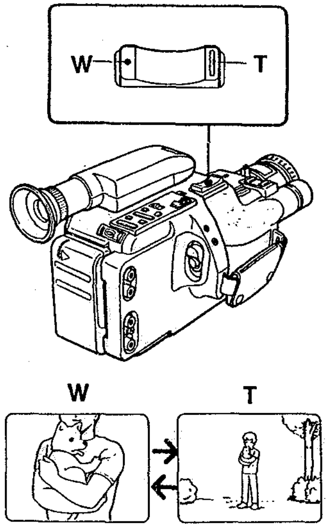
Auto focus will not function when a shutter speed other than the normal speed and 1/100 is selected under a fluorescent lamp.
When shooting, use manual focusing.

## Shutter Speed Adjustment

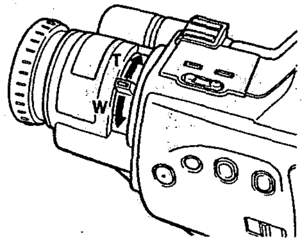
**Notes**

- A ghost image will appear in still picture mode of this unit. To view a clear still or slow picture, use another video cassette deck with the clean still/slow function.
- When shutter speed 1/250 or faster is selected, recording must be done under sunlight or video light.
- When the recording is done under a light discharged tube, such as a fluorescent lamp, sodium lamp, or mercury lamp, the brightness of the recorded picture may vary ("flicker").
- When the shutter speed is changed during a camera recording of a TV screen, the brightness of the recorded picture may vary.
- When a very bright object is shot at a faster shutter speed, a light, vertical, belt-like line ("smear") may appear on the screen.

K-1



K-2



## Zooming

The size of the subject in the scene can be changed.

### Power Zoom K-1

— for smooth and constant zooming

Press the T side of the power zoom button for telephoto and the W side for wide-angle.
The zoom ring will move automatically.

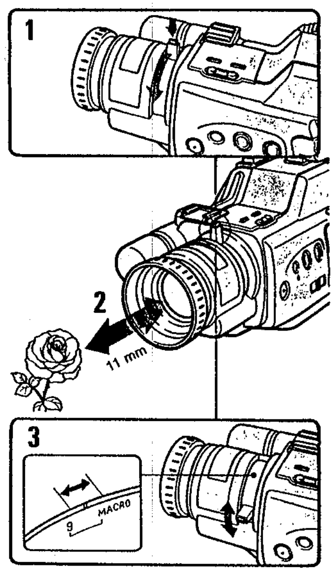
### Manual Zoom K-2

— to create a dramatic effect

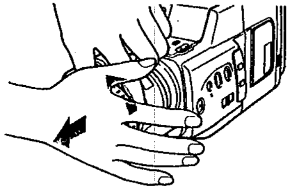
Turn the manual zoom lever upward for telephoto and downward for wide-angle.

**For more zooming effect**
The focal length of this unit is 9 mm to 54 mm. Converted into the focal length of a 35 mm camera, this means approximately f-48 mm to 288 mm.

L-1



L-2



## Close-ups (Macro)

Even tiny objects can literally fill the screen for dramatic close-up effects.
Remove the lens hood before operation.

L-1

1 Turn the zoom lever to the MACRO position, pressing the macro set button.

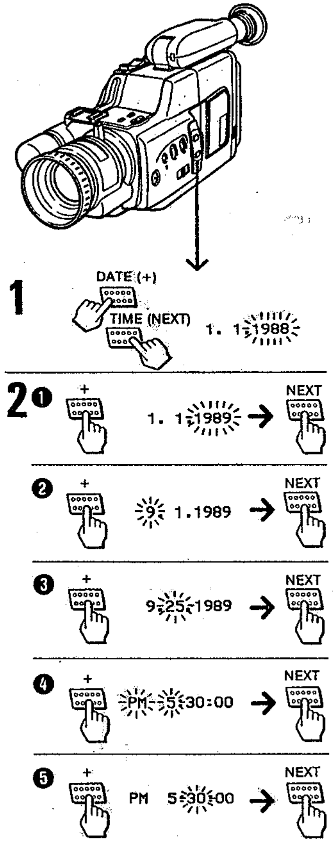
2 Bring the recorder as close as necessary to obtain the desired subject size.
The subject can be as close as approximately 11 mm (7/16 in.) from the lens surface.

3 Turn the zoom lever within the MACRO range to focus sharply. (The power zoom button can be used instead of the zoom lever.)

**To remove the lens hood** L-2
The lens hood also functions as focus ring.
To remove the lens hood, set the POWER switch to OFF and turn the hood counterclockwise with the palm of your hand.

**Notes**
- Auto focusing does not function in macro shooting.
- If the subject is closer than 11 mm, it cannot be brought into focus.
- When shooting in macro, the depth of field is very shallow, so pay attention to focus. To keep the subject in focus, use a tripod or monopod.
- Zooming cannot be used in macro shooting when the zoom lever is in the MACRO range. To change the subject size in the scene, move the recorder.

M-1



## Recording Date or Time

Once the date and the current time are adjusted, the date or time can be recorded together with the picture.

- Make sure that the fully-charged battery pack and lithium battery are installed.
- Set the POWER switch to CAMERA, and slide the STANDBY switch up.

### To Set Date and Time M-1

1 Press the DATE and TIME buttons simultaneously **for more than 3 seconds.**
The date indication will appear in the viewfinder (date/time setting mode).
The DATE button now functions as the + button and the TIME button functions as the NEXT button.

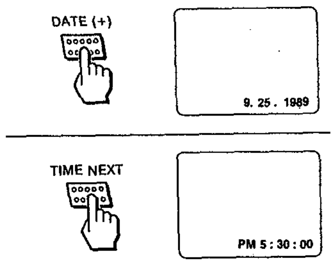
2 Adjust the ❶ year, ❷ month, ❸ day, ❹ hour and ❺ minute in sequence, following the illustration.
First adjust the blinking digits with the + button, and then press the NEXT button.
After adjusting the minute digits, press the NEXT button at the same time with an announced time signal.

The clock starts operating. There is no need to readjust the date and time as long as the lithium battery remains.

**To clear the time indication from the display**
Press the TIME (NEXT) button again.

**The + button can be pressed in two ways**
- When you keep the button pressed, the digits will advance continuously.
- When you press and immediately release the button, the digits will advance by one.

M-2



## Recording Date or Time

**To check the preset date and time**
Press the DATE or TIME button in the recording pause mode. When the same button is pressed again, the indication goes off.

**To readjust an incorrect date or time**
Set the unit to date/time setting mode and press the NEXT button repeatedly until the incorrect digit blinks. Correct it with the + button and press the NEXT button. After adjusting the minute digits, press the NEXT button at the same time with an announced time signal.

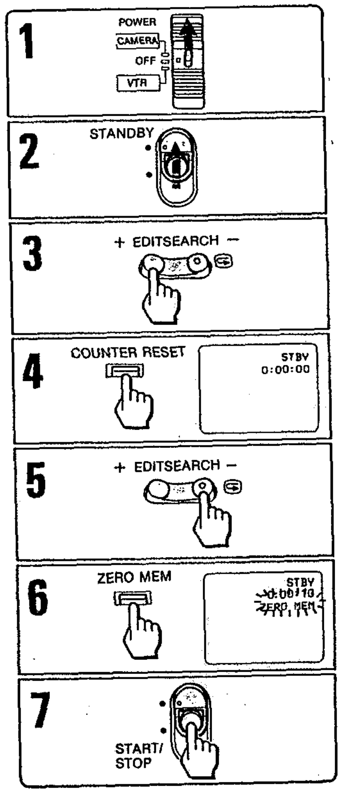
## To Record the Date or Time M-2

During camera recording or in recording pause mode, press the DATE or TIME button to display the date or time on the viewfinder screen.
The date or time being displayed will be recorded together with the picture.

**To stop recording the date or time**
Press the DATE or TIME button again. The picture recording will continue.

N-1

N-2



## Editsearch 2

You can insert (record) video and audio simultaneously from the camera onto any recorded tape. N-1

### Operation N-2

Monitor the picture being inserted on the viewfinder screen.

1 While pressing the small button, set the POWER switch to CAMERA.
2 Slide the STANDBY switch up to set the unit to recording pause mode.
3 Keep pressing the "+" or "−" side of the EDITSEARCH button and release the button at the point where the insert should **end.** The unit will be set to recording pause mode.
4 Display the counter in the display window and press the COUNTER RESET button. The counter is reset to zero. (For an accurate ending point, press the COUNTER RESET button immediately after the EDITSEARCH button is released and while the still picture is displayed.)
5 Keep pressing the "−" side of the EDITSEARCH button and release the button at the point where the insert should **begin.**
6 Press the ZERO MEM button. The insert ending point is stored in memory.
7 Press the START/STOP button. Insert recording will begin.

The insert recording will stop automatically near the counter zero point.

**To cancel ZERO MEM mode**
Press the ZERO MEM button so that the ZERO MEM indicator disappears.

**To change the insert ending point**
Press the ZERO MEM button to turn off the ZERO MEM indicator and repeat steps 3 through 6 above.

**To insert the date or time**
Follow steps 1 through 6 above, press the DATE or TIME button to display the date or time indication on the viewfinder screen and then press the START/STOP button.

## Editsearch 2

**Notes on ZERO MEM mode**
ZERO MEM mode is cancelled automatically in the following cases.

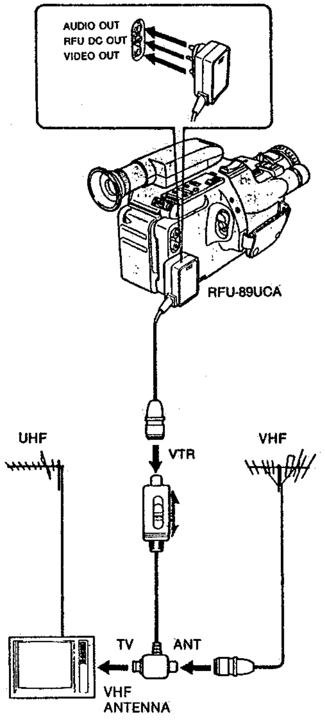
- When an insert recording is completed.
- When the position of the POWER switch is changed.
- When the power is turned off.
- When the cassette is ejected.

To restore it, press the ZERO MEM button again.

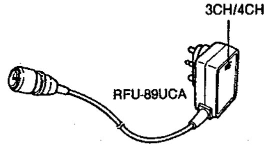
**Notes**

- When recording pause mode lasts for approximately 5 minutes, pause mode will be automatically released and the unit will be turned off.
- When the inserted tape is played back, the picture may be distorted at the end of the inserted program.

O-1



O-2



VTR Operation

## Preparation for Playback

When the VCR is connected to the TV, refer to the pages 74, 76 and 78.

### Connecting a TV

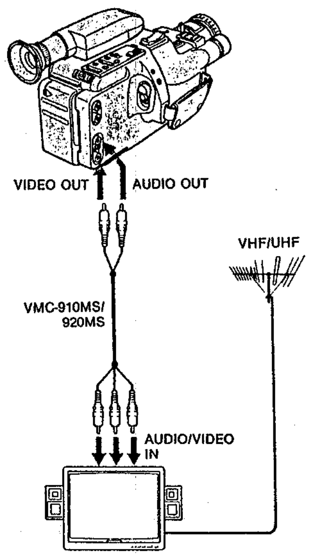
O-1

1 Connect the RFU adaptor to the CCD-F35.
2 Connect the VHF antenna, CCD-F35 and TV to the antenna selector (supplied with the RFU-89UCA).
Use a 75-ohm coaxial cable for antenna connection.
3 Set the selector switch on the antenna selector as follows:

For viewing a playback picture → VTR
For viewing TV programs → ANT

**On the TV channel for the video camera recorder** O-2
Whenever you view the playback picture, set the channel selector of the RFU adaptor to either VHF channel 3 CH or 4 CH and select the same channel on the TV.

O-3



## Preparation for Playback

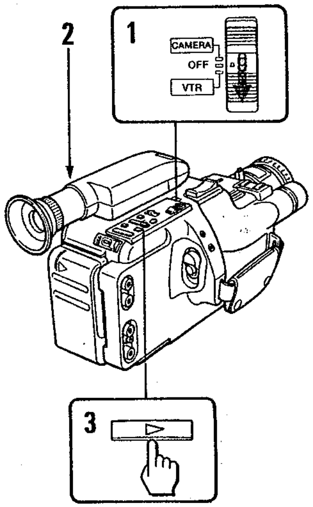
### Connecting a TV (or color monitor) equipped with andio/video input connectors O-3

Leave the TV antenna cable connected to the TV.

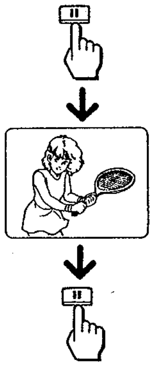
1 Connect the CCD-F35 to the TV using the optional VMC-910MS/920MS audio/video cable.
2 Set the TV/VIDEO selector button on the TV as follows:

For viewing a playback picture → VIDEO
For viewing TV programs → TV

P-1



P-2



## Playback

Turn on the TV (or color monitor), and select the channel for viewing a playback picture (or set the TV/VIDEO selector to VIDEO).

P-1

1 While pressing the small button, set the POWER switch to VTR.
2 Insert a cassette.
3 Press the ▷ button.
Playback will start.

**To stop the tape,** press the □ button.

**After using,** be sure to set the POWER switch on the recorder to OFF.

**To view a still picture** P-2
Press the ❚❚ button during playback. To resume playback, press the ❚❚ button again or press the ▷ button.

## Monitoring a High-Speed Picture

**During playback**

1 In the playback mode, press the ▶▶ or ◀◀ button.
The picture will be monitored at high speed as long as it is kept pressed.
2 Release the ▶▶ or ◀◀ button at the desired point.
Normal playback will resume.

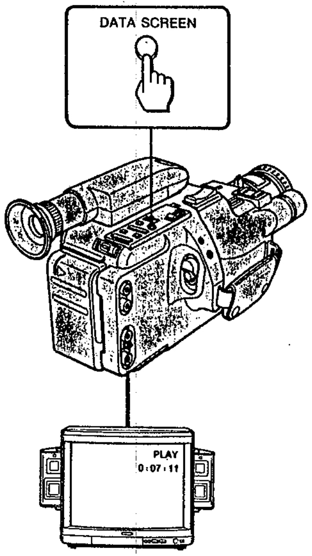
**During fast-forward or rewind**

1 Press the ▶▶ button in fast-forward mode or press the ◀◀ button in rewind mode.
The picture is displayed while the button is kept pressed.
2 Release the ▶▶ or ◀◀ button to resume normal fast-forward or rewind mode.
3 Press the ▷ button to play back.

**Notes**

- If you move the position of the POWER switch during playback, the tape will stop. When you move the POWER switch to CAMERA in the playback pause mode, however, the unit will enter recording pause mode.
- When the pause mode lasts for 5 minutes or more, the unit will automatically enter the stop mode.
- Streaks will appear and the sound will be muted in the high-speed picture.

Q



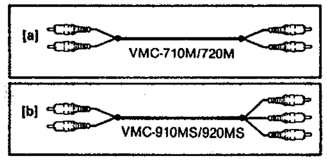
## To Display the Indication on the Viewfinder Screen on the TV Q

Press the DATA SCREEN button.
The indication on the viewfinder screen is superimposed on the TV program.
It is convenient to check the indication on the TV screen when the playback picture is viewed on the TV or when the video camera recorder is operated from a distance using the Remote Commander.

**To clear the indication,** press the DATA SCREEN button again.

**Note**
To edit from the CCD-F35 to another VCR, clear the indication on the TV or the indication will be recorded with the picture.

R-1



# TV Program Recording

The following connections make both TV program viewing/recording and tape playback possible.

## Combination of the Equipment to be Used

**Connection example 1** (page 74)
To connect the VCR without input selector

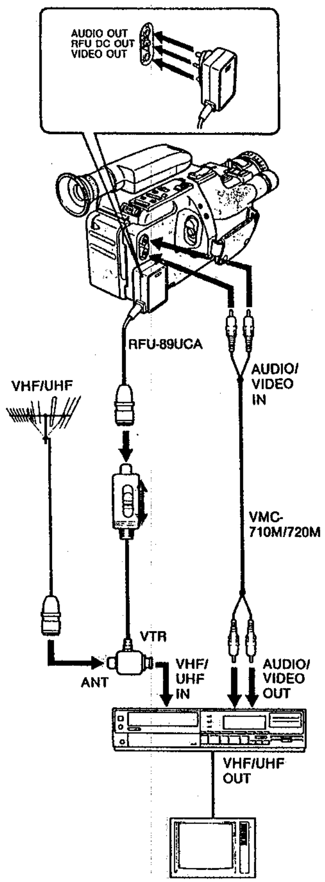
**Connection example 2** (page 76)
To connect the VCR with an input selector

**Connection example 3** (page 78)
To connect the TV tuner and color monitor or TV with audio/video input and output jacks

## Connecting Cables R-1

- For antenna cable connections, use 75-ohm coaxial cables.
- For video/audio connection, use an optional audio/video cable to match the connectors on the equipment to be connected.
  **[a]** Optional VMC-710M/720M for monaural equipment
  **[b]** Optional VMC-910MS/920MS for stereo equipment

R-2


AUDIO OUT
RFU DC OUT
VIDEO OUT
RFU-89UCA
VHF/UHF
AUDIO/ VIDEO IN
VMC-710M/720M
VTR
ANT
VHF/ UHF IN
AUDIO/ VIDEO OUT
VHF/UHF OUT

## TV Program Recording

### Connection Example 1 R-2

**To conneect the VCR without input selector**

The RFU-89UCA RFU adaptor kit is required.

**Connections**
1 Connect the equipment as shown in the illustration.
2 Select the channel selector of the RFU adaptor to either VHF channel 3 CH or 4 CH which is not active in your area.
3 Set the selector switch on the antenna selector as follows:

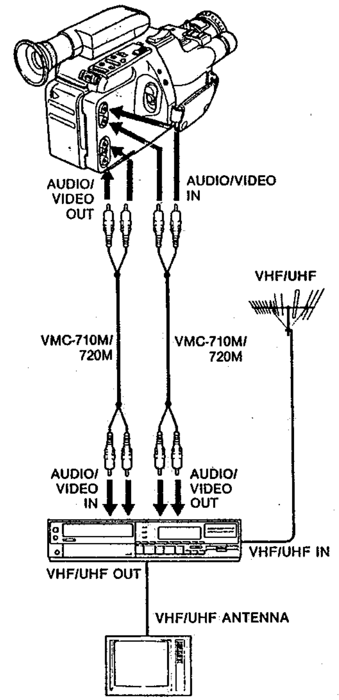
For viewing a playback picture or a picture being recorded on the CCD-F35 → VTR
For viewing TV programs → ANT

**TV program recording**
1 Turn on the VCR and TV.
2 While pressing the small button, set the POWER switch on the CCD-F35 to VTR.
3 Set the selector switch on the antenna selector to ANT and select the channel for the VCR on the TV.
4 Select the TV channel to be recorded on the VCR.
5 Insert a cassette into the CCD-F35 and slide the ● REC switch.
Recording will start.

**To view another TV program while recording**
Set the TV/VTR select button on the VCR to TV and select the desired program on the TV.

**Playback**
1 Turn on the TV.
2 While pressing the small button, set the POWER switch on the CCD-F35 to VTR.
3 Set the selector switch on the antenna selector to VTR and select the channel for the VCR on the TV.
4 Insert a cassette into the CCD-F35 and press the ▷ button. Playback will start.

R-3


AUDIO/ VIDEO OUT
AUDIO/VIDEO IN
VHF/UHF
VMC-710M/ 720M
VMC-710M/ 720M
AUDIO/ VIDEO IN
AUDIO/ VIDEO OUT
VHF/UHF IN
VHF/UHF OUT
VHF/UHF ANTENNA

## TV Program Recording

### Connection Example R-3

**To connect the VCR with an input selector**

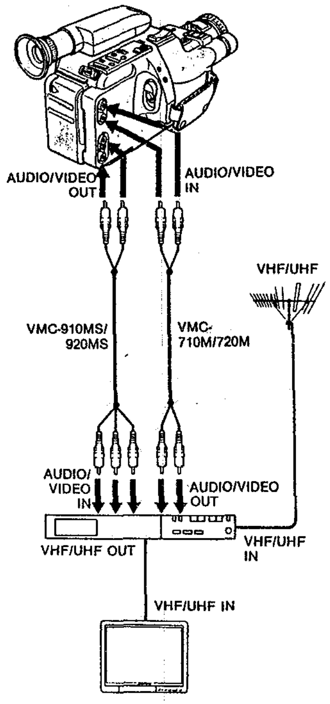
**Connections**
Connect the equipment as shown in the illustration.

**TV program recording**
1 Turn on the VCR and TV.
2 While pressing the small button, set the POWER switch on the CCD-F35 to VTR.
3 Select the channel for the VCR on the TV.
4 Set the input selector to TUNER, the TV/VTR select button to VTR and select the TV channel to be recorded on the VCR.
5 Insert a cassette into the CCD-F35 and slide the ● REC switch.
Recording will start.

**To view another TV program while recording**
Set the TV/VTR select button on the VCR to TV and select the desired program on the TV.

**Playback**
1 Turn on the VCR and TV.
2 While pressing the small button, set the POWER switch on the CCD-F35 to VTR.
3 Set the input selector on the VCR to LINE and select the channel for the VCR on the TV.
4 Insert a cassette into the CCD-F35 and press the ▷ button. Playback will start.

R-4


AUDIO/VIDEO OUT
AUDIO/VIDEO IN
VHF/UHF
VMC-910MS/920MS
VMC-710M/720M
AUDIO/VIDEO IN
AUDIO/VIDEO OUT
VHF/UHF OUT
VHF/UHF IN
VHF/UHF IN

## TV Program Recording

### Connection Example 3 R-4

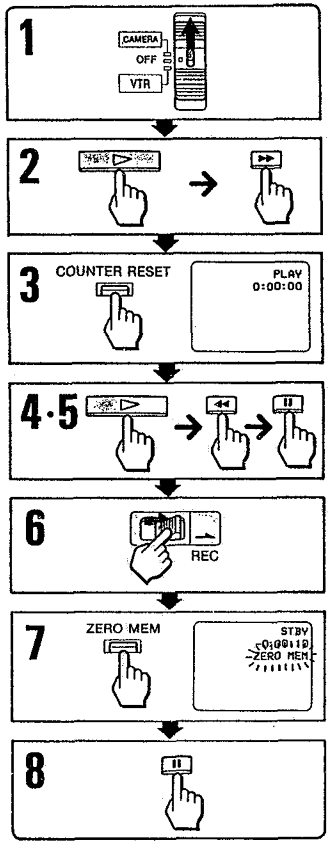
**To connnect the TV tuner and color monitor or TV with audio/video input and output jacks**

**Connections**
Connect the equipment as shown in the illustration.

**TV program recording**
1 Turn on the TV tuner or TV.
2 While pressing the small button, set the POWER switch on the CCD-F35 to VTR.
3 Set the input selector on the TV tuner or TV to TV and select the TV channel to be recorded.
4 Insert a cassette into the CCD-F35 and slide the ● REC switch.
Recording will start.

**Playback**
1 Turn on the TV tuner or TV.
2 While pressing the small button, set the POWER switch on the CCD-F35 to VTR.
3 Set the input selector on the TV tuner or TV to VIDEO.
4 Insert a cassette into the CCD-F35 and press the ▷ button. Playback will start.

S


1
CAMERA
OFF
VTR
2
3
COUNTER RESET
PLAY
0:00:00
4·5
6
REC
7
ZERO MEM
STBY
0:00:10
ZERO MEM
8

## Insert Recording

### To Insert a TV Program or a Picture from Another VCR S

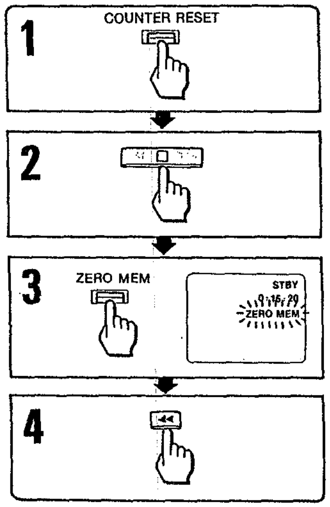
Monitor the picture being inserted on the viewfinder screen.

1 While pressing the small button, set the POWER switch to VTR.
2 Locate the point on the tape where the insert should end by pressing the ▶▶ or ◀◀ button during playback.
3 Display the counter in the display window and press the COUNTER RESET button.
The counter is reset to zero.
4 Press the ◀◀ button during playback to rewind the tape a little further than the point where the insert should begin.
5 Release the ◀◀ button to resume playback and press the ❚❚ button at the insert starting point.
6 Slide the ● REC switch in the arrow direction to set the unit to recording pause mode.
7 Press the ZERO MEM button.
The insert ending point is stored in memory.
8 To start recording, press the ❚❚ button.

The insert recording will stop automatically near the counter zero point.

**To cancel ZERO MEM mode**
Press the ZERO MEM button so that the ZERO MEM indicator disappears.

T



## Use of the Tape Counter

During recording or playback, the digits on the counter indicate the actual recording or playback time.

### To Index the Whole Tape

Press the COUNTER RESET button at the beginning of the tape so that the counter shows "0:00:00". By noting the counter reading at a particular point, you can easily find that point later by referring to the tape counter.

**Notes**
- The counter reading and the point of the tape may not correspond exactly. Use the counter as a guide.
- The counter does not operate for a blank, unrecorded portion of a tape.
- There will be a time lag of several seconds on the counter reading after repeated fast-forward and rewind operations.
- There will be also a time lag of several seconds when the tape recorded in LP and SP modes mixed or the tape having a blank portion between the recorded portions in played back.

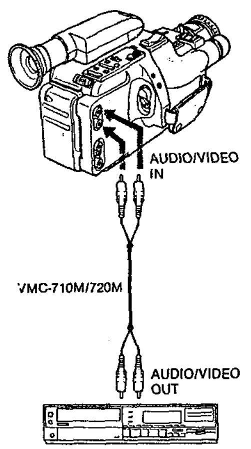
### To Return to a Pre-registered Point T

1 During recording or playback, press the COUNTER RESET button at the point you later want to locate.
2 Press the □ button when the recording or playback has finished.
3 Press the ZERO MEM button. The "ZERO MEM" indicator will blink in the display window.
4 Press the ◀◀ or ▶▶ button.
The tape will be rewound or sent forward and stop automatically when the counter reaches approximately zero.

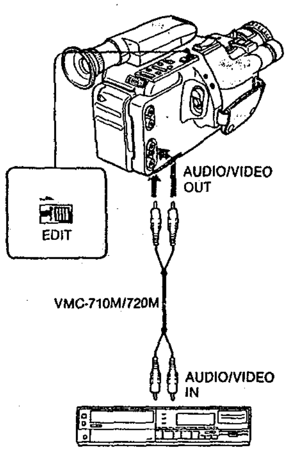
**To cancel ZERO MEM mode**
Press the ZERO MEM button so that the ZERO MEM indicator disappears.

**Notes**
- The ZERO MEM button does not function during recording or playback mode.
Be sure to press the ZERO MEM button when the tape is stopped.
- The ZERO MEM mode is cancelled automatically once the tape is rewound or sent forward to zero.

U-1



U-2



## Tape Editing

To edit a home movie tape, you will need another VCR or another video camera recorder.

### To Edit from Another VCR to the CCD-F35 U-1

1 While pressing the small button, set the POWER switch on the CCD-F35 to VTR.
2 Start playback on another VCR.
3 Slide the ● REC switch on the CCD-F35.

### To Edit from the CCD-F35 to Another VCR U-2

1 While pressing the small button, set the POWER switch on the CCD-F35 to VTR and turn on the other VCR.
2 Slide the EDIT switch on the CCD-F35 in the direction of the arrow (ON).
3 Set the input selector on the VCR to LINE.
4 Press the ❚❚ button on the CCD-F35 during playback at the point where you want to start recording.
5 Press the record button on the other VCR, pressing the ❚❚ button.
6 Release the ❚❚ buttons on both units.
Recording will start.

When the VCR to be used is a stereo type, use the VMC-910MS/920MS connecting cord.

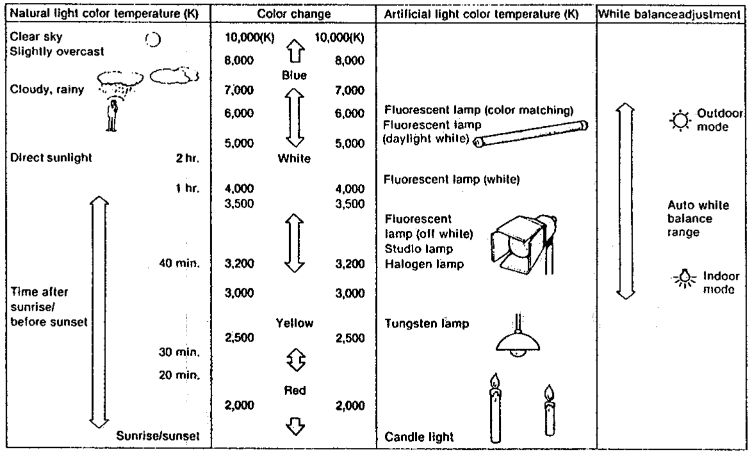
**After editing,** turn off both units and be sure to slide the EDIT switch in the reversed direction to the arrow (OFF).

**To cut off an unnecessary portion**
Press the ❚❚ button on the recorder at the beginning of the unnecessary portion.
Release it where you want to resume recording.

**Function of the EDIT switch**
Slide this switch in the direction of the arrow (ON) whenever you edit tapes. Signal loss that results from tape-to-tape transfer will be reduced, achieving more accurate signal transfer.
When recording or playing back normally, keep this switch in the reversed direction to the arrow (OFF).

## Color temperature — how it effects white balance adjustment

If the temperature of an object continues to increase, it will eventually begin giving off light. At this time, there is a fixed relationship between the object's temperature and its "light color." The temperature of the object radiating the light is expressed in absolute temperature (K). This is also known as the color temperature, which in turn stands for "light color." As color temperature increases, the light color changes from red to yellow to white to blue.


Natural light color temperature (K)
Color change
Artificial light color temperature (K)
White balanceadjustment
Clear sky
Slightly overcast
Cloudy, rainy
Direct sunlight
2 hr.
1 hr.
40 min.
Time after sunrise/ before sunset
30 min.
20 min.
Sunrise/sunset
10,000(K)
8,000
Blue
7,000
6,000
5,000
White
4,000
3,500
3,200
3,000
Yellow
2,500
Red
2,000
Fluorescent lamp (color matching)
Fluorescent lamp (daylight white)
Fluorescent lamp (white)
Fluorescent lamp (off white)
Studio lamp
Halogen lamp
Tungsten lamp
Candle light
Outdoor mode
Auto white balance range
Indoor mode

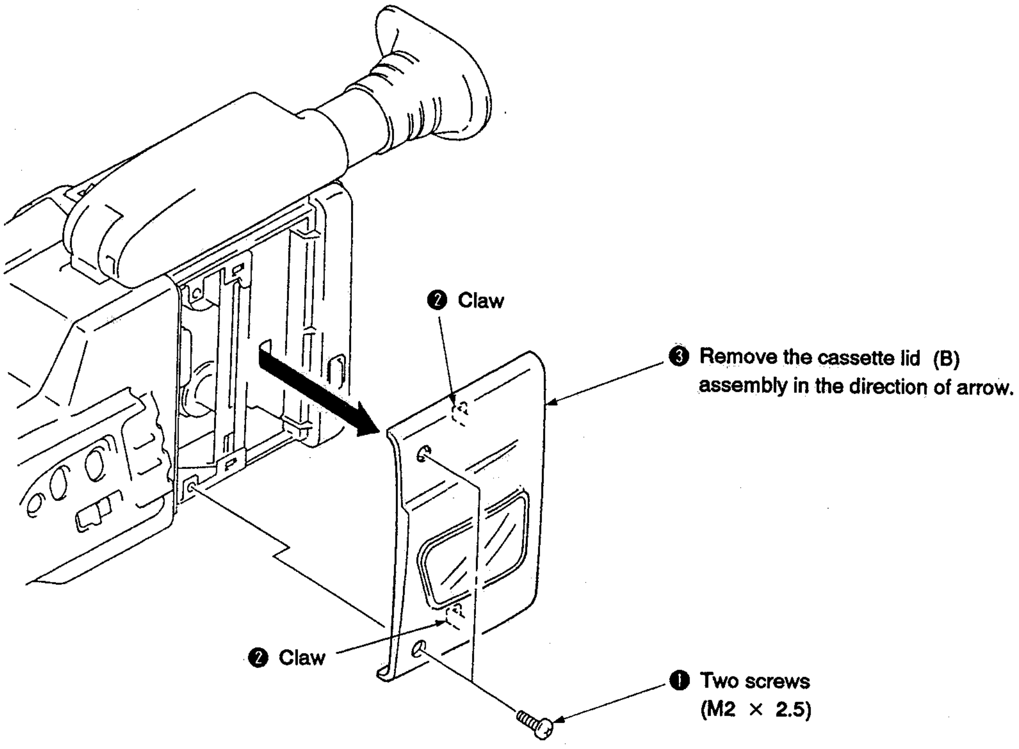
# Trouble Indicators

○ when the indicator appears ▭ slow blinking ▭ fast blinking

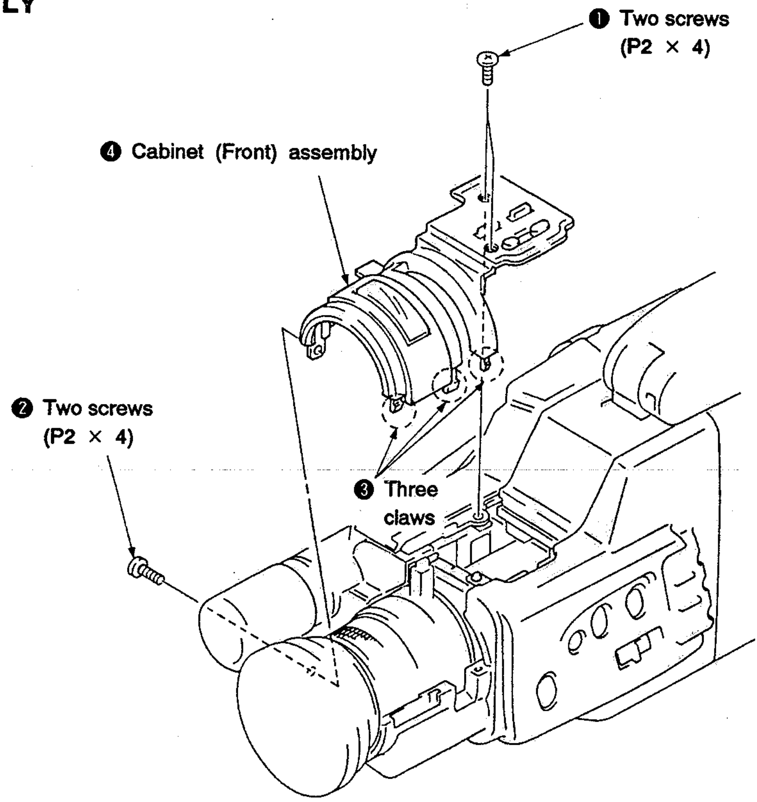
| | Position of the POWER switch | | Indicator | |
|---|---|---|---|---|
| Cause | VTR | CAMERA | Indicator to be shown inside the viewfinder | Camera recording/ battery lamp |
| The battery is fully exhausted. | ○ | ○ | 🔋 | |
| The battery is weak. | ○ | ○ | 🔋 | |
| The tape is at its end. | | ○ | 📼<br>⏏ | |
| No cassette is inserted. | | ○ | 📼 | |
| The tab on the cassette is out. | | ○ | 📼<br>⏏ | |
| Moisture has condensed inside the unit. | ○ | ○ | ◙<br>⏏ | |
| The gap of the head is clogged. | ○ | ○ | ⊗ | |
| Other troubles | ○ | ○ | ⏏ | |
| The lithium battery is fully exhausted | | ○ | AM12:00:00 (5 seconds)<br>⬇<br>1. 1. 1988 AM12:00:00 | |
| The lithium battery is weak | | ○ | Time (5 seconds)<br>⬇<br>Normal indication for the operation | |

# SECTION 2
# DISASSEMBLY

## 2-1. REMOVAL OF CASSETTE LID (B) ASSEMBLY

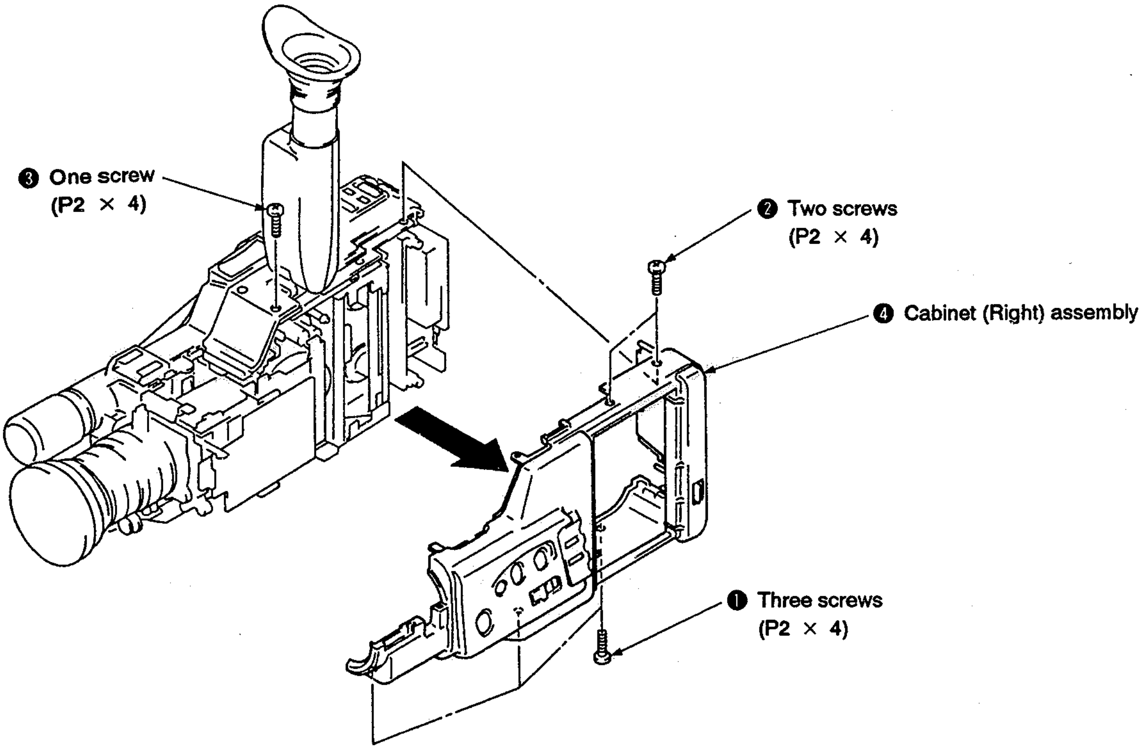

❷ Claw
❸ Remove the cassette lid (B) assembly in the direction of arrow.
❷ Claw
❶ Two screws (M2 × 2.5)

## 2-2. REMOVAL OF CABINET (FRONT) ASSEMBLY

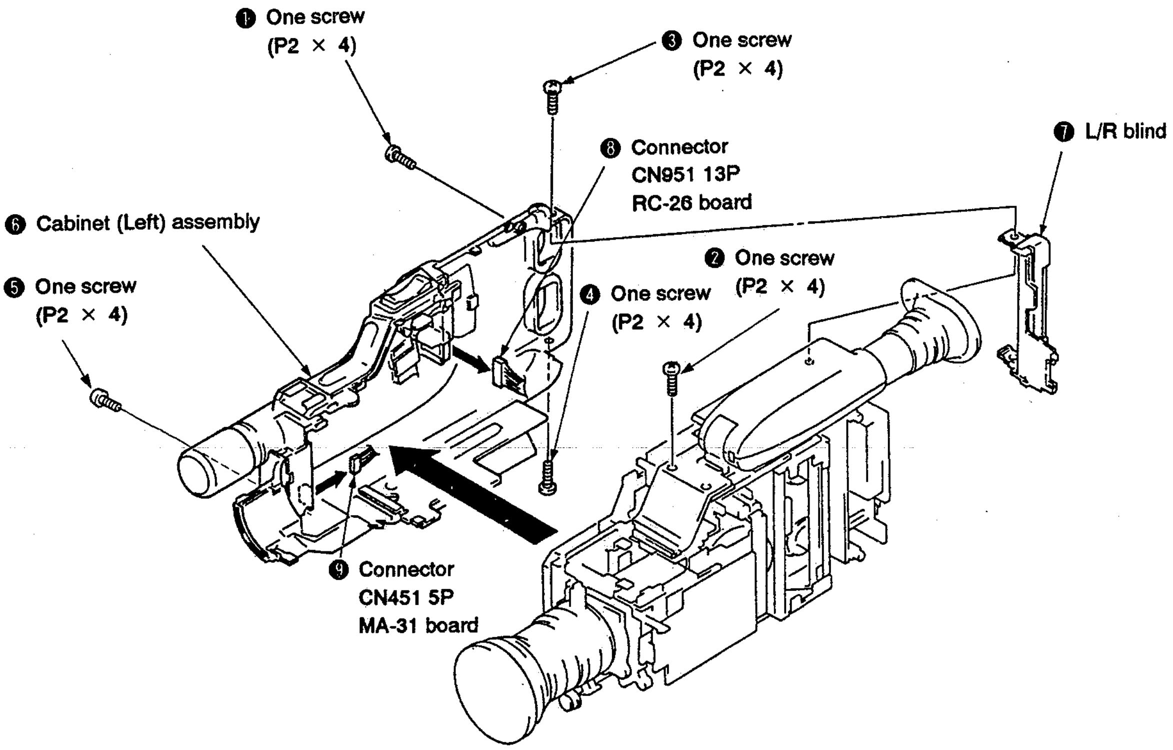

❶ Two screws (P2 × 4)
❹ Cabinet (Front) assembly
❷ Two screws (P2 × 4)
❸ Three claws

## 2-3. REMOVAL OF CABINET (RIGHT) ASSEMBLY

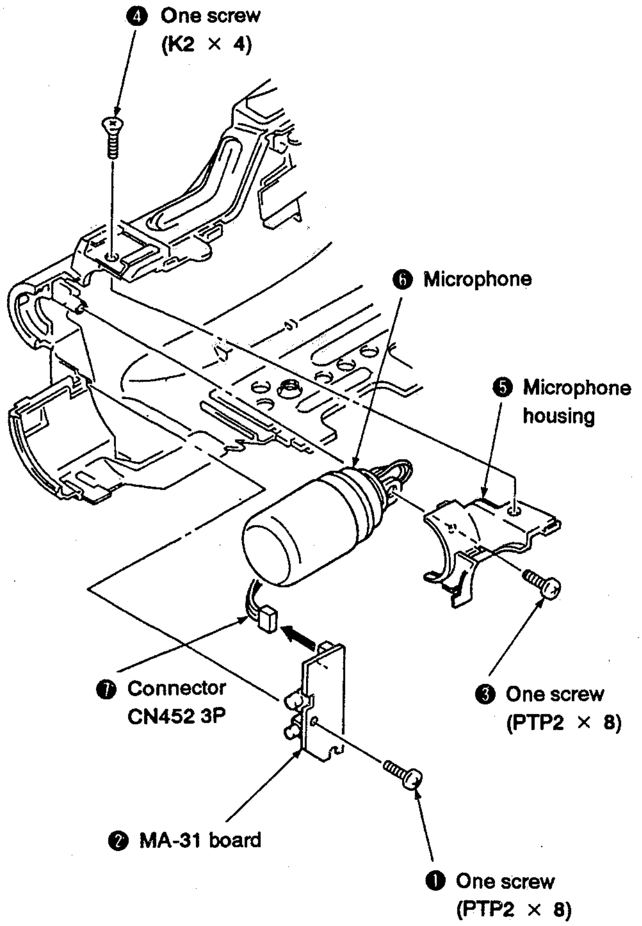
**Note:** Perform this servicing with EVF raise as the figure below.


❸ One screw
(P2 × 4)
❷ Two screws
(P2 × 4)
❹ Cabinet (Right) assembly
❶ Three screws
(P2 × 4)

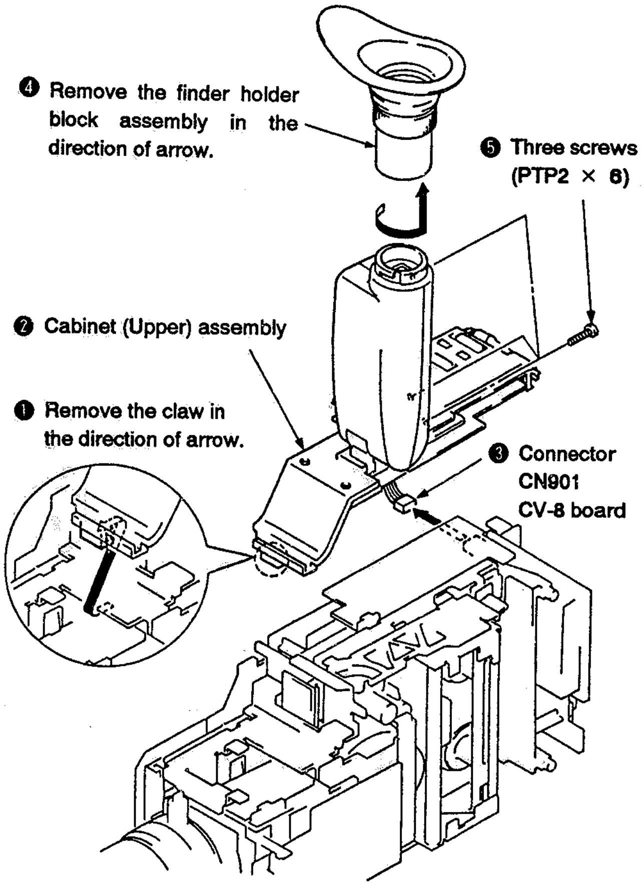
## 2-4. REMOVAL OF CABINET (LEFT) ASSEMBLY

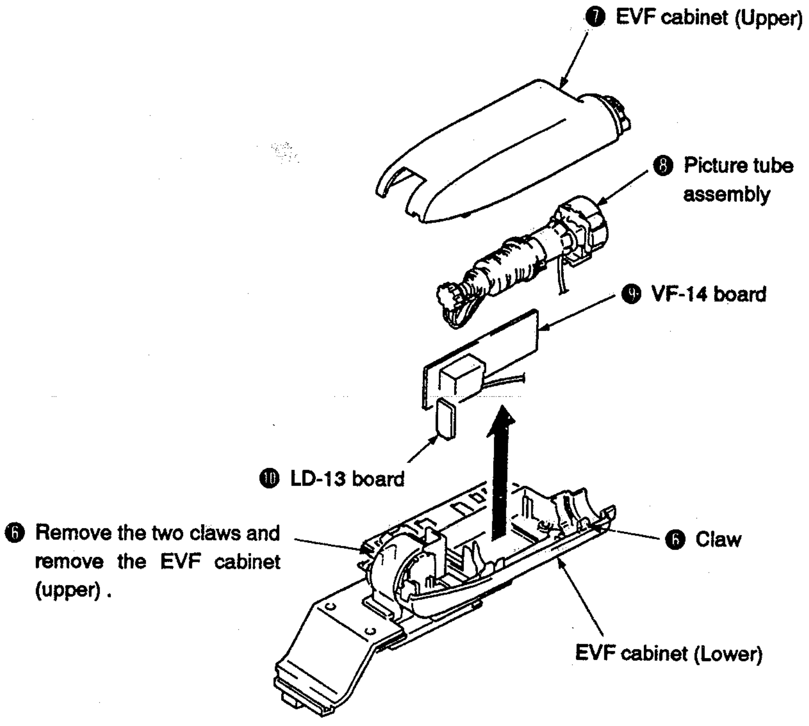

❶ One screw
(P2 × 4)
❸ One screw
(P2 × 4)
❽ Connector
CN951 13P
RC-26 board
❼ L/R blind
❻ Cabinet (Left) assembly
❷ One screw
(P2 × 4)
❺ One screw
(P2 × 4)
❹ One screw
(P2 × 4)
❾ Connector
CN451 5P
MA-31 board

## 2-5. REMOVAL OF MICROPHONE

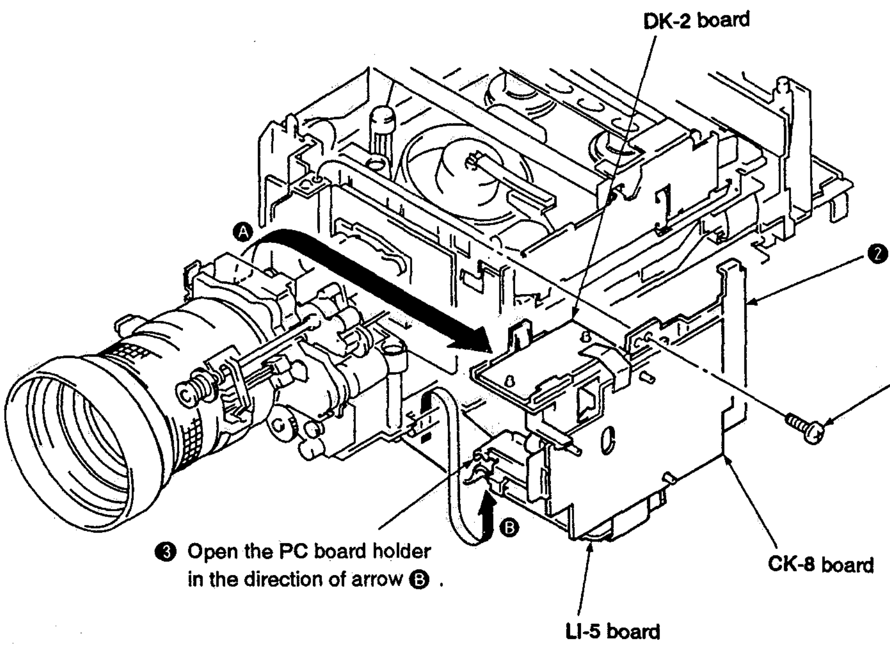

❹ One screw
(K2 × 4)
❻ Microphone
❺ Microphone
housing
❼ Connector
CN452 3P
❸ One screw
(PTP2 × 8)
❷ MA-31 board
❶ One screw
(PTP2 × 8)

## 2-6. REMOVAL OF CABINET (UPPER) ASSEMBLY AND EVF


❹ Remove the finder holder block assembly in the direction of arrow.
❺ Three screws
(PTP2 × 6)
❷ Cabinet (Upper) assembly
❶ Remove the claw in the direction of arrow.
❸ Connector
CN901
CV-8 board


❼ EVF cabinet (Upper)
❽ Picture tube
assembly
❾ VF-14 board
❿ LD-13 board
❻ Remove the two claws and remove the EVF cabinet (upper).
❻ Claw
EVF cabinet (Lower)

## 2-7. OPENING THE CK/LI ASSEMBLY

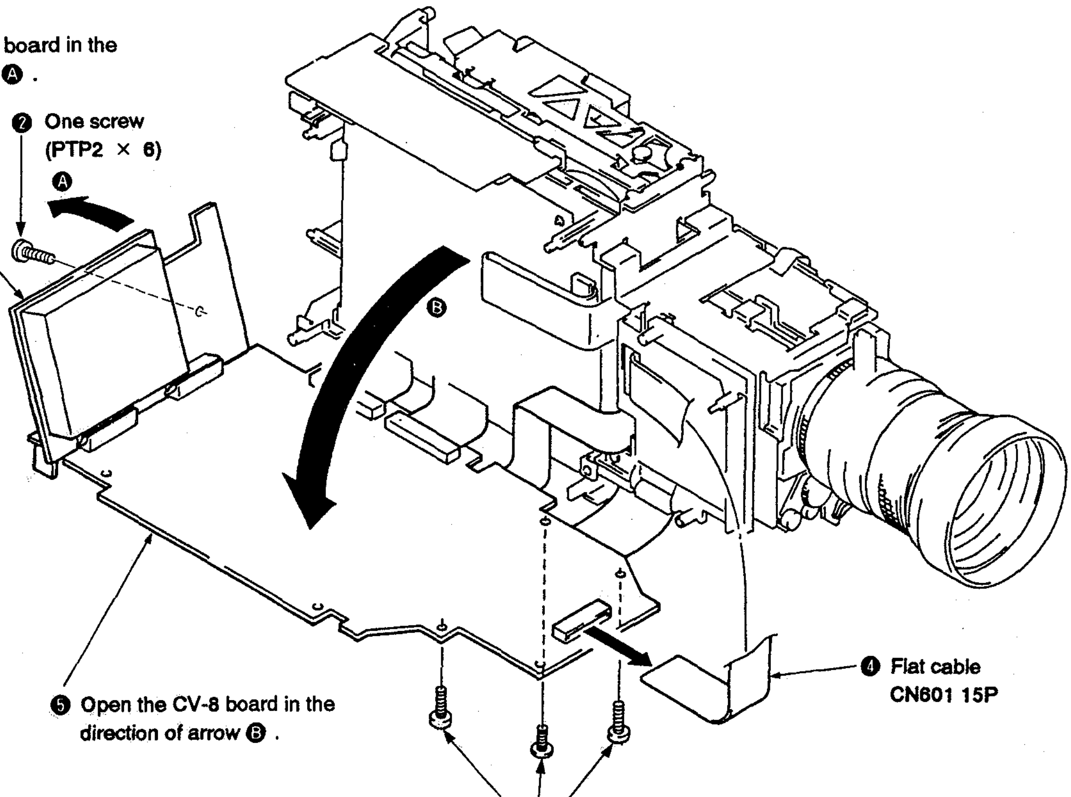


❶ One screw
(P2 × 4)

❷ Open the CK/LI assembly in the direction of arrow Ⓐ .

❸ Open the PC board holder in the direction of arrow Ⓑ .

## 2-8. OPENING THE PS-180 AND CV-8 BOARDS



❶ Three screws
(P2 × 4)

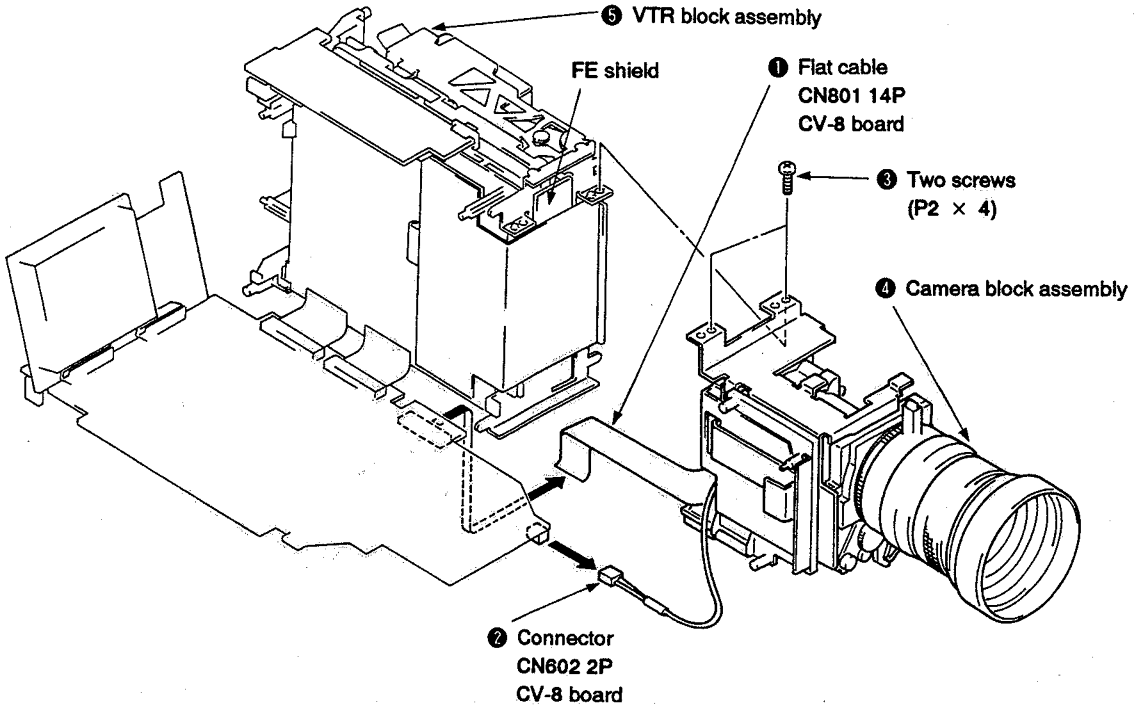
❷ One screw
(PTP2 × 6)

❸ Open the PS-180 board in the direction of arrow Ⓐ .

❹ Flat cable
CN601 15P

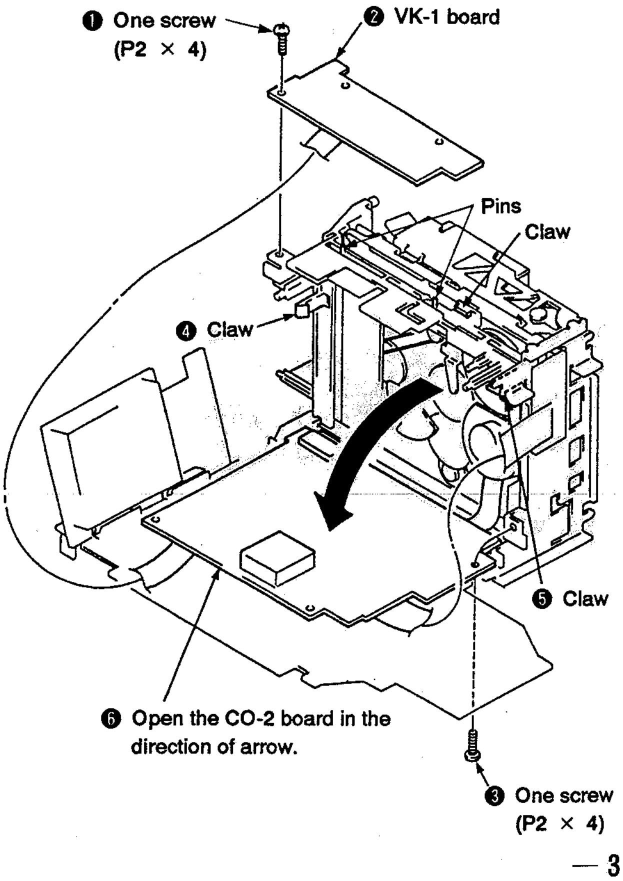
❺ Open the CV-8 board in the direction of arrow Ⓑ .

## 2-9. SEPARATING THE CAMERA AND VTR BLOCKS

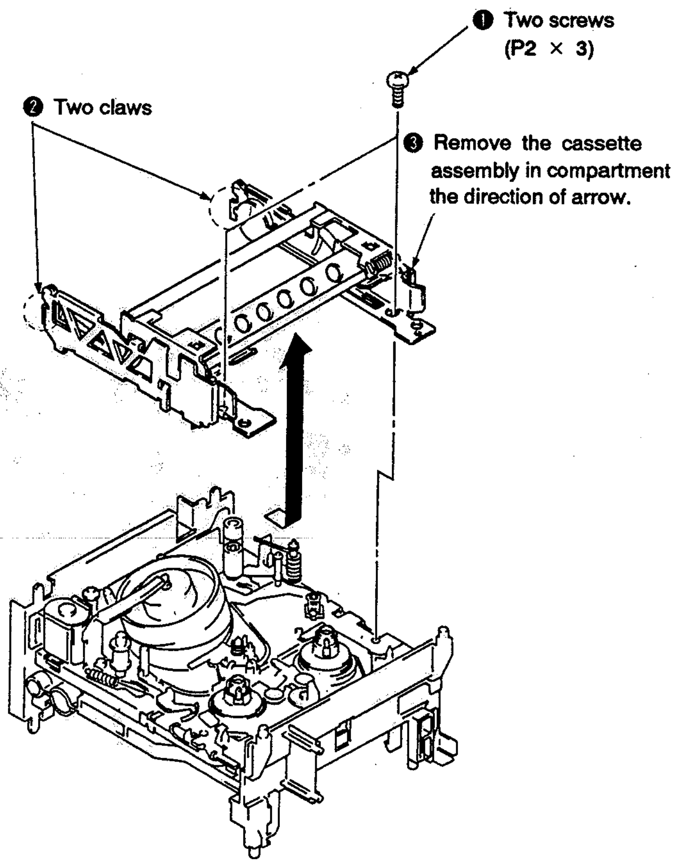

❺ VTR block assembly
FE shield
❶ Flat cable
CN801 14P
CV-8 board
❸ Two screws
(P2 × 4)
❹ Camera block assembly
❷ Connector
CN602 2P
CV-8 board

## 2-10. OPENING THE CO-2 AND VK-1 BOARDS

**Notes:** 1) Pay attention to two pins and a claw when removing the VK-1 board.
2) Care for the FE shield which is adhered to the RP amplifier shield case with a double coated tape.

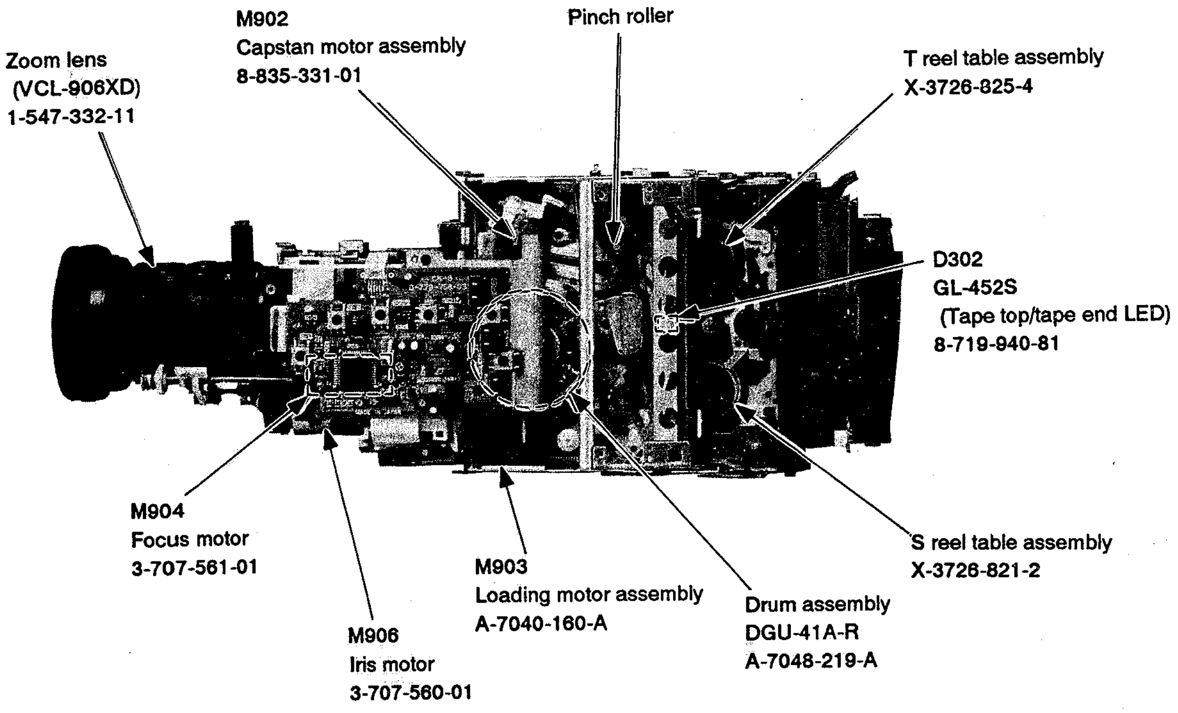

❶ One screw
(P2 × 4)
❷ VK-1 board
Pins
Claw
❹ Claw
❺ Claw
❻ Open the CO-2 board in the direction of arrow.
❸ One screw
(P2 × 4)

## 2-11. REMOVAL OF CASSETTE COMPARTMENT ASSEMBLY

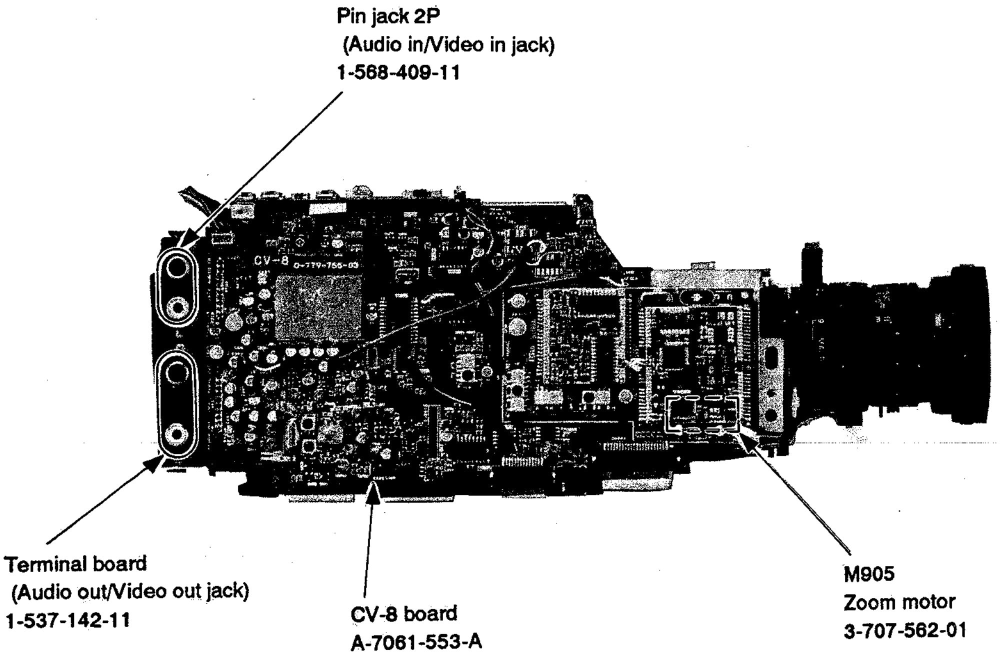

❶ Two screws
(P2 × 3)
❷ Two claws
❸ Remove the cassette assembly in compartment the direction of arrow.

## 2-12. INTERNAL VIEW

### – Right Side –

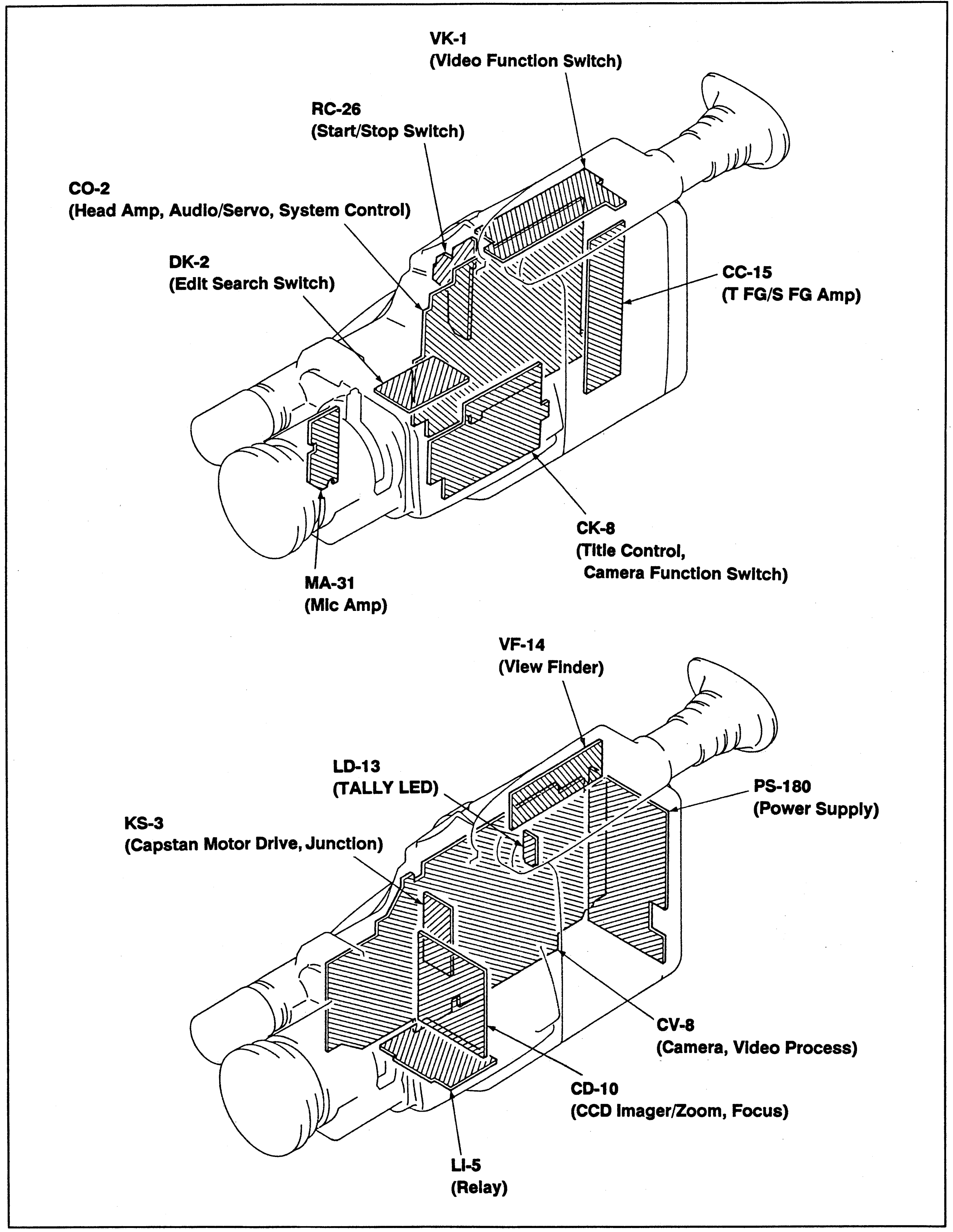

Zoom lens
(VCL-906XD)
1-547-332-11
M902
Capstan motor assembly
8-835-331-01
Pinch roller
T reel table assembly
X-3726-825-4
D302
GL-452S
(Tape top/tape end LED)
8-719-940-81
M904
Focus motor
3-707-561-01
M906
Iris motor
3-707-560-01
M903
Loading motor assembly
A-7040-160-A
Drum assembly
DGU-41A-R
A-7048-219-A
S reel table assembly
X-3726-821-2

### – Left Side –

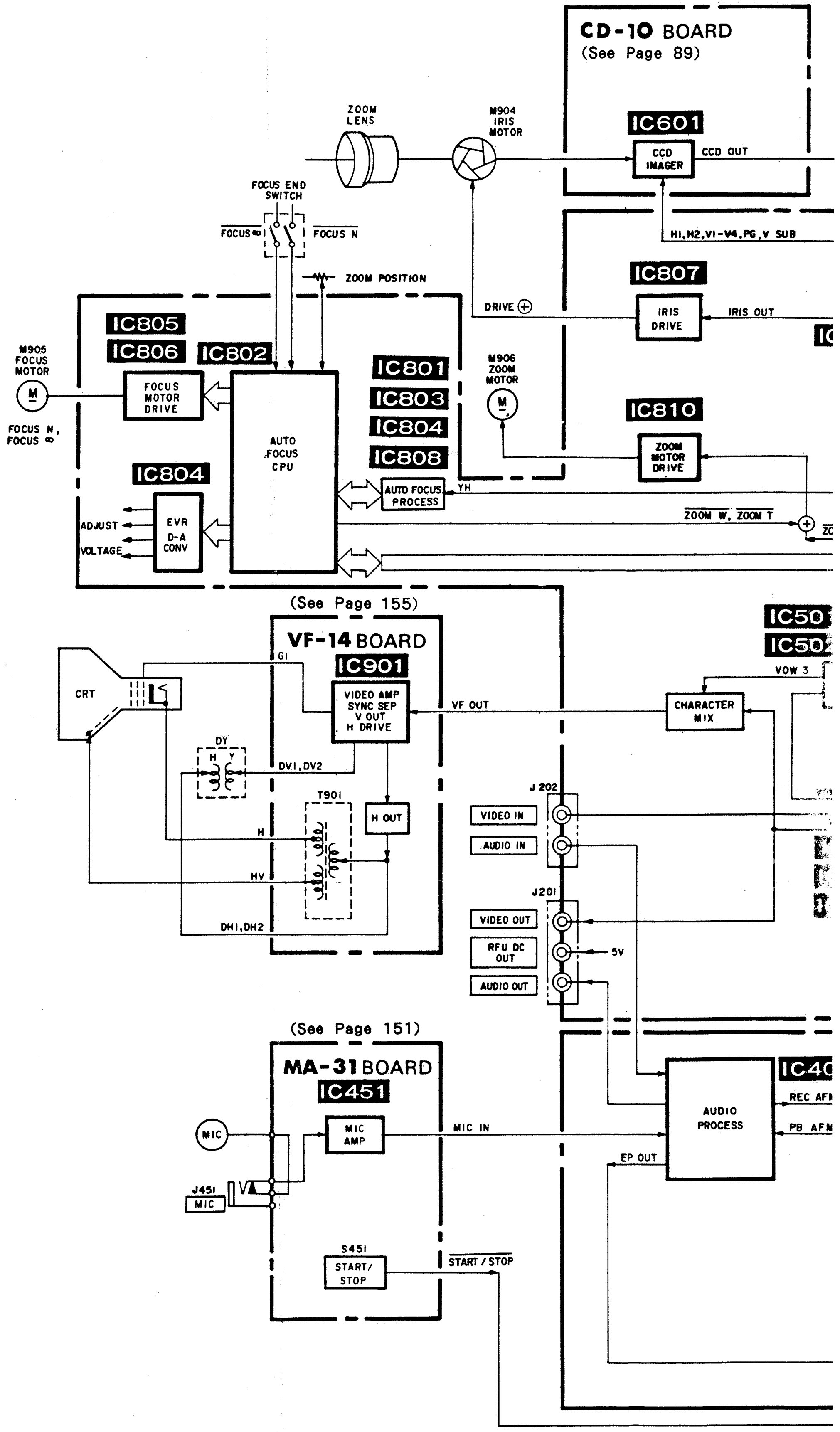

Pin jack 2P
(Audio in/Video in jack)
1-568-409-11
Terminal board
(Audio out/Video out jack)
1-537-142-11
CV-8 board
A-7061-553-A
M905
Zoom motor
3-707-562-01

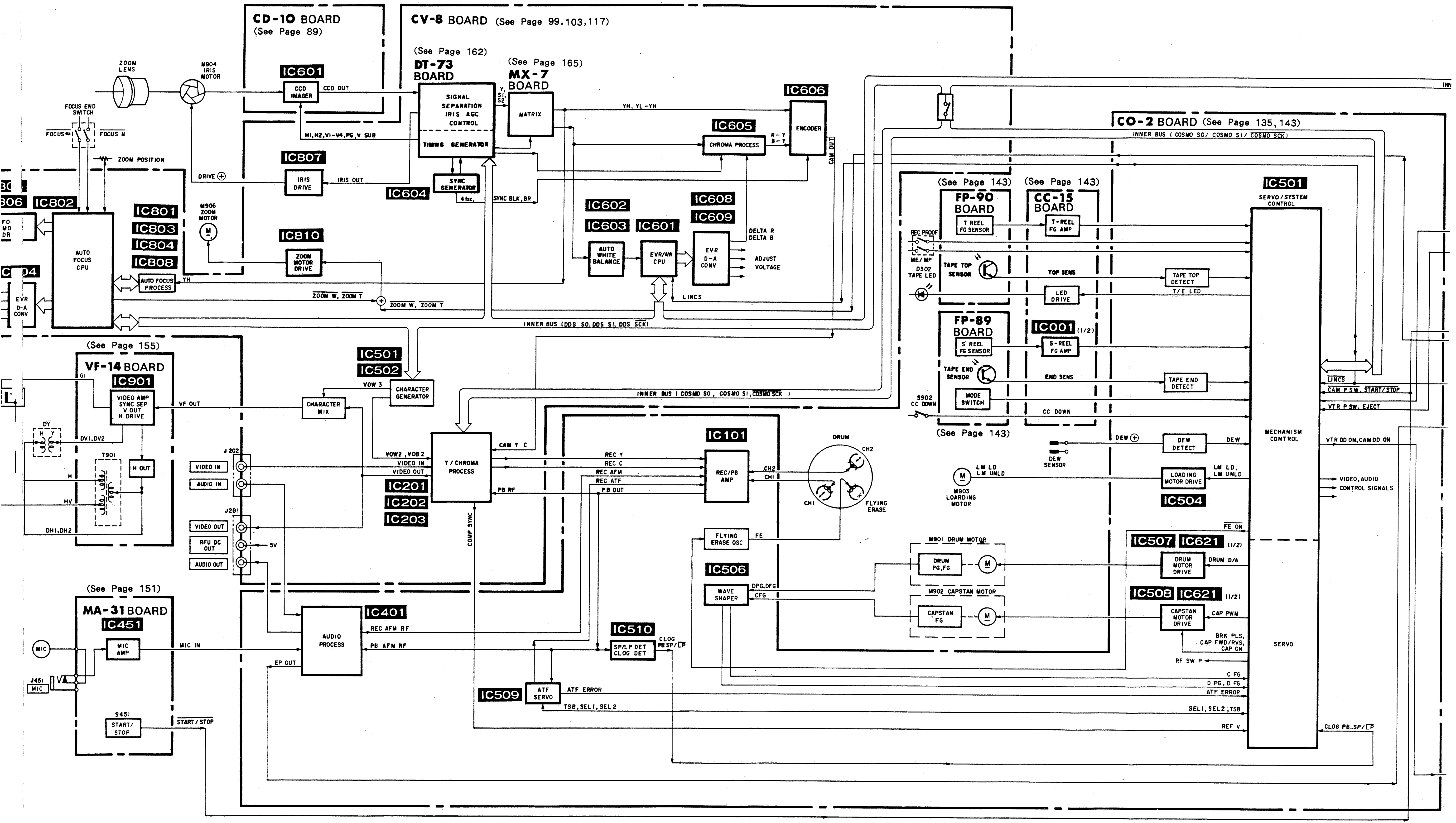
# SECTION 3
# DIAGRAMS

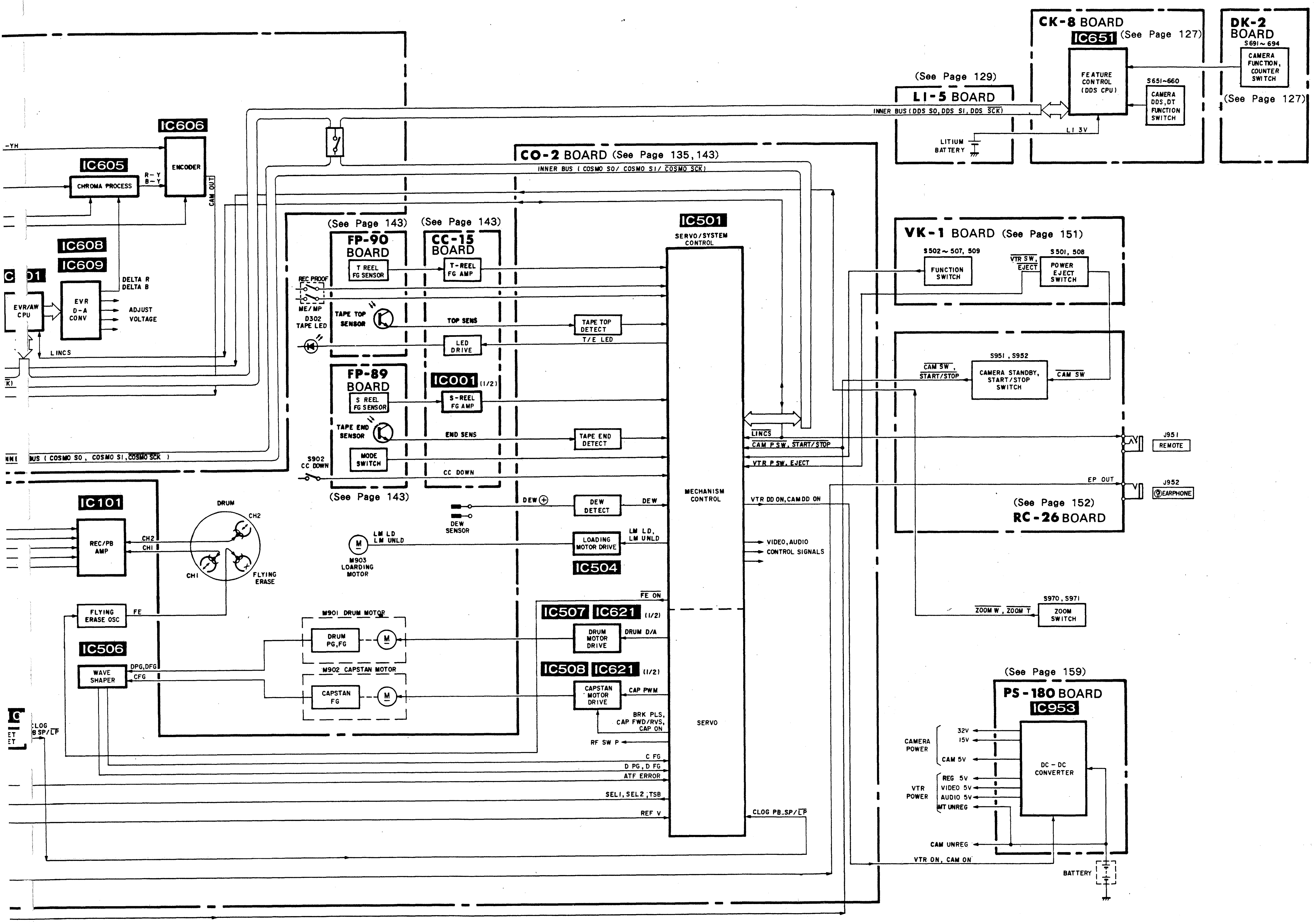
## 3-1. CIRCUIT BOARDS LOCATION


VK-1
(Video Function Switch)
RC-26
(Start/Stop Switch)
CO-2
(Head Amp, Audio/Servo, System Control)
DK-2
(Edit Search Switch)
CC-15
(T FG/S FG Amp)
CK-8
(Title Control,
Camera Function Switch)
MA-31
(Mic Amp)
VF-14
(View Finder)
LD-13
(TALLY LED)
PS-180
(Power Supply)
KS-3
(Capstan Motor Drive, Junction)
CV-8
(Camera, Video Process)
CD-10
(CCD Imager/Zoom, Focus)
LI-5
(Relay)

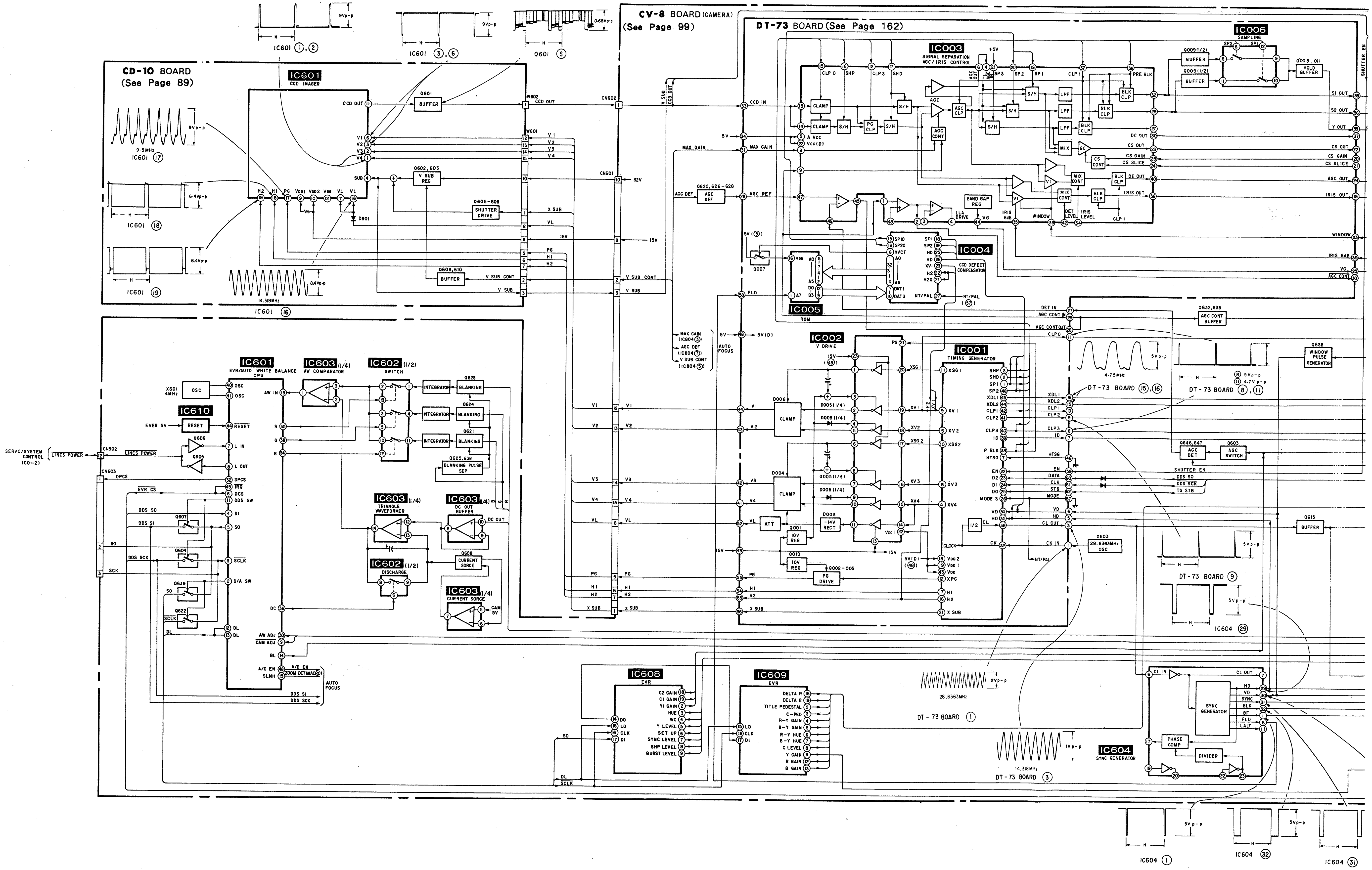
## 3-2. OVERALL BLOCK DIAGRAM

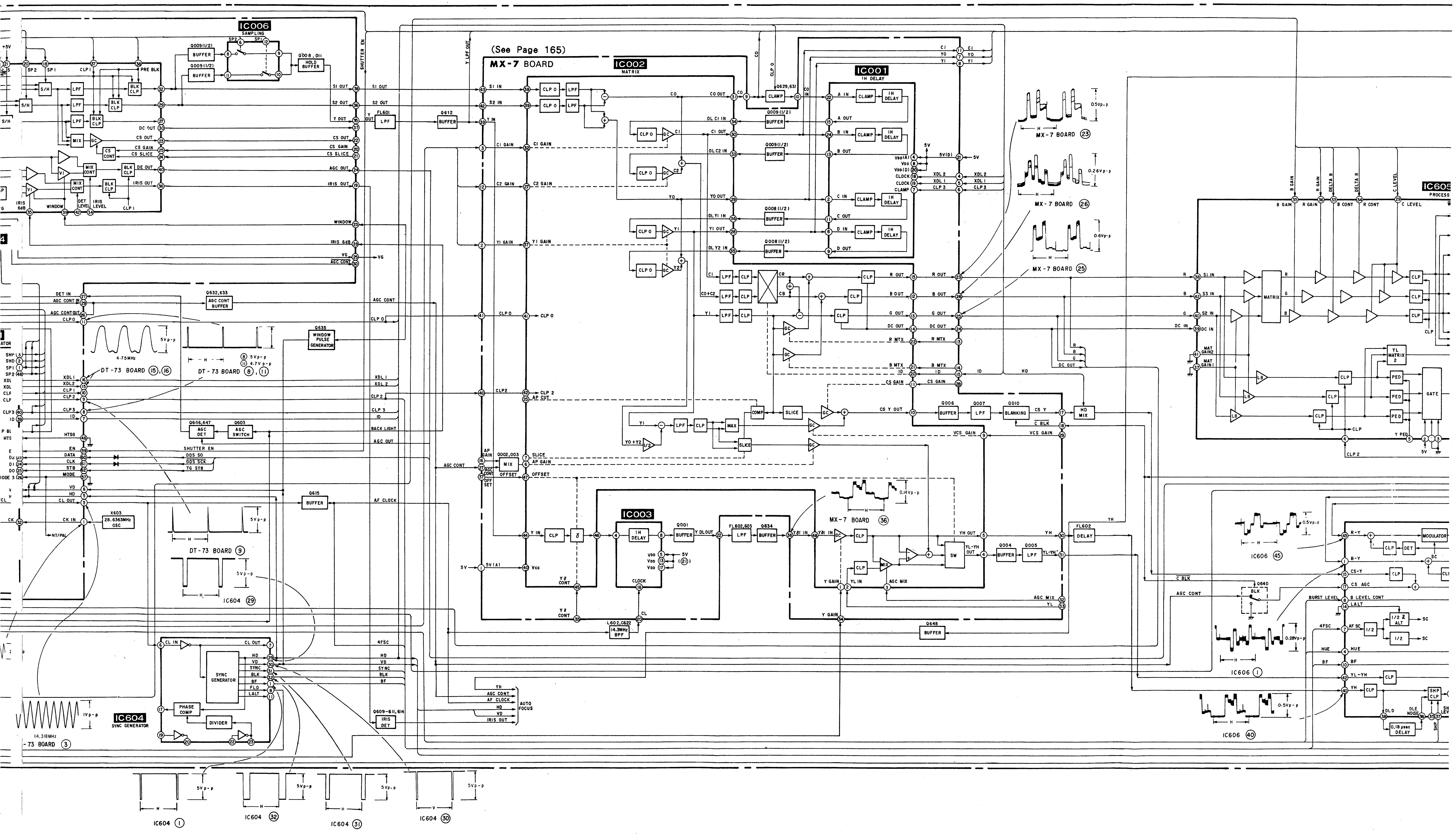

CD-10 BOARD
(See Page 89)
IC601
CCD IMAGER
CCD OUT
ZOOM LENS
M904 IRIS MOTOR
FOCUS END SWITCH
FOCUS ∞
FOCUS N
ZOOM POSITION
H1,H2,V1-V4,PG,V SUB
IC807
IRIS DRIVE
IRIS OUT
DRIVE ⊕
IC805
IC806
IC802
IC801
IC803
IC804
IC808
M905 FOCUS MOTOR
FOCUS N, FOCUS ∞
FOCUS MOTOR DRIVE
AUTO FOCUS CPU
M906 ZOOM MOTOR
IC810
ZOOM MOTOR DRIVE
IC804
EVR D-A CONV
ADJUST
VOLTAGE
AUTO FOCUS PROCESS
YH
ZOOM W, ZOOM T
(See Page 155)
VF-14 BOARD
IC901
VIDEO AMP SYNC SEP V OUT H DRIVE
VF OUT
CRT
G1
DY
DV1,DV2
T901
H OUT
H
HV
DH1,DH2
CHARACTER MIX
VDW 3
J202
VIDEO IN
AUDIO IN
J201
VIDEO OUT
RFU DC OUT
AUDIO OUT
5V
(See Page 151)
MA-31 BOARD
IC451
MIC
MIC AMP
MIC IN
J451 MIC
S451 START/STOP
START/STOP
AUDIO PROCESS
REC AF
PB AF
EP OUT

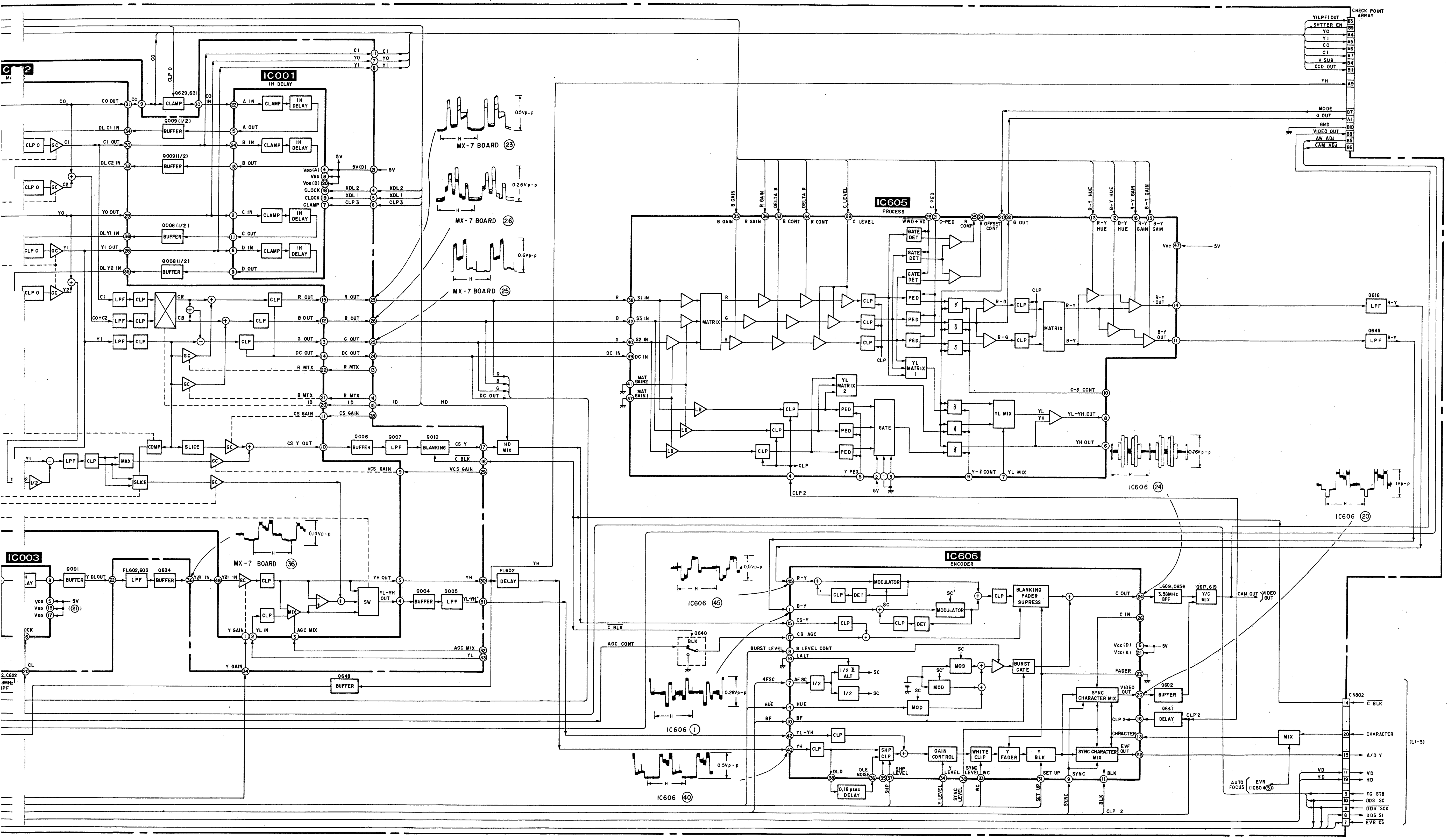

CD-10 BOARD
(See Page 89)
CV-8 BOARD (See Page 99,103,117)
(See Page 162)
DT-73 BOARD
(See Page 165)
MX-7 BOARD
ZOOM LENS
M904 IRIS MOTOR
IC601
CCD IMAGER
CCD OUT
SIGNAL SEPARATION IRIS AGC CONTROL
TIMING GENERATOR
Y, S1, S2
MATRIX
YH, YL -YH
IC606
ENCODER
IC605
CHROMA PROCESS
R-Y
B-Y
CAM OUT
FOCUS END SWITCH
FOCUS ∞
FOCUS N
ZOOM POSITION
H1,H2,V1-V4,PG,V SUB
IC807
IRIS DRIVE
IRIS OUT
DRIVE ⊕
IC604
SYNC GENERATOR
4fsc,
SYNC BLK,BR
IC802
IC801
IC803
IC804
IC808
AUTO FOCUS CPU
AUTO FOCUS PROCESS
YH
M906 ZOOM MOTOR
IC810
ZOOM MOTOR DRIVE
ZOOM W, ZOOM T
ZOOM W, ZOOM T
EVR D-A CONV
IC602
IC603
IC601
IC608
IC609
AUTO WHITE BALANCE
EVR/AW CPU
EVR D-A CONV
DELTA R
DELTA B
ADJUST VOLTAGE
LINCS
INNER BUS (DDS SO, DDS SI, DDS SCK)
(See Page 155)
VF-14 BOARD
IC901
G1
VIDEO AMP SYNC SEP V OUT H DRIVE
VF OUT
DY
H Y
DV1,DV2
T901
H OUT
H
HV
DH1,DH2
IC501
IC502
VOW 3
CHARACTER GENERATOR
CHARACTER MIX
INNER BUS ( COSMO SO, COSMO SI, COSMO SCK )
J 202
VIDEO IN
AUDIO IN
J201
VIDEO OUT
RFU DC OUT
AUDIO OUT
5V
VOW2, VOB 2
VIDEO IN
VIDEO OUT
Y / CHROMA PROCESS
CAM Y C
IC201
IC202
IC203
COMP SYNC
PB RF
REC Y
REC C
REC AFM
REC ATF
PB OUT
IC101
REC/PB AMP
CH2
CH1
DRUM
CH2
CH1
FLYING ERASE
FLYING ERASE OSC
FE
IC506
WAVE SHAPER
DPG,DFG
CFG
(See Page 151)
MA-31 BOARD
IC451
MIC
MIC AMP
MIC IN
J451 MIC
S451
START/ STOP
START / STOP
IC401
AUDIO PROCESS
REC AFM RF
PB AFM RF
EP OUT
IC510
SP/LP DET CLOG DET
CLOG PB SP/LP
IC509
ATF SERVO
ATF ERROR
TSB, SEL 1, SEL 2
CO-2 BOARD (See Page 135, 143)
INNER BUS ( COSMO SO/ COSMO SI/ COSMO SCK)
INN
(See Page 143)
FP-90 BOARD
T REEL FG SENSOR
(See Page 143)
CC-15 BOARD
T-REEL FG AMP
REC PROOF
ME/MP
D302 TAPE LED
TAPE TOP SENSOR
TOP SENS
TAPE TOP DETECT
T/E LED
LED DRIVE
FP-89 BOARD
S REEL FG SENSOR
IC001 (1/2)
S-REEL FG AMP
TAPE END SENSOR
END SENS
TAPE END DETECT
S902 CC DOWN
MODE SWITCH
CC DOWN
(See Page 143)
IC501
SERVO/SYSTEM CONTROL
MECHANISM CONTROL
LINCS
CAM P SW, START/STOP
VTR P SW, EJECT
VTR DD ON, CAM DD ON
VIDEO, AUDIO CONTROL SIGNALS
DEW SENSOR
DEW ⊕
DEW DETECT
DEW
M903 LOARDING MOTOR
LM LD
LM UNLD
LOADING MOTOR DRIVE
LM LD, LM UNLD
IC504
FE ON
IC507
IC621 (1/2)
M901 DRUM MOTOR
DRUM PG,FG
DRUM MOTOR DRIVE
DRUM D/A
M902 CAPSTAN MOTOR
CAPSTAN FG
IC508
IC621 (1/2)
CAPSTAN MOTOR DRIVE
CAP PWM
BRK PLS, CAP FWD/RVS, CAP ON
RF SW P
SERVO
C FG
D PG, D FG
ATF ERROR
SEL1, SEL2, TSB
REF V
CLOG PB.SP/LP


IC606
ENCODER
IC605
CHROMA PROCESS
R−Y
B−Y
CAM OUT
IC608
IC609
EVR/AW CPU
EVR D-A CONV
DELTA R
DELTA B
ADJUST VOLTAGE
LINCS
INNER BUS ( COSMO SO , COSMO SI , COSMO SCK )
IC101
REC/PB AMP
CH2
CH1
DRUM
FLYING ERASE
FLYING ERASE OSC
FE
IC506
WAVE SHAPER
DPG,DFG
CFG
CLOG
8 SP/LP
(See Page 143)
FP-90 BOARD
T REEL FG SENSOR
(See Page 143)
CC-15 BOARD
T-REEL FG AMP
REC PROOF
ME/MP
D302 TAPE LED
TAPE TOP SENSOR
TOP SENS
TAPE TOP DETECT
T/E LED
LED DRIVE
FP-89 BOARD
S REEL FG SENSOR
IC001 (1/2)
S-REEL FG AMP
TAPE END SENSOR
END SENS
TAPE END DETECT
MODE SWITCH
S902 CC DOWN
CC DOWN
(See Page 143)
CO-2 BOARD (See Page 135, 143)
INNER BUS ( COSMO SO/ COSMO SI/ COSMO SCK)
IC501
SERVO/SYSTEM CONTROL
MECHANISM CONTROL
SERVO
DEW
DEW DETECT
DEW SENSOR
M903 LOADING MOTOR
LM LD
LM UNLD
LOADING MOTOR DRIVE
IC504
FE ON
IC507 IC621 (1/2)
M901 DRUM MOTOR
DRUM PG,FG
DRUM MOTOR DRIVE
DRUM D/A
IC508 IC621 (1/2)
M902 CAPSTAN MOTOR
CAPSTAN FG
CAPSTAN MOTOR DRIVE
CAP PWM
BRK PLS, CAP FWD/RVS, CAP ON
RF SW P
C FG
D PG, D FG
ATF ERROR
SEL1, SEL2, TSB
REF V
CLOG PB.SP/LP
LINCS
CAM P SW, START/STOP
VTR P SW, EJECT
VTR DD ON, CAM DD ON
VIDEO, AUDIO
CONTROL SIGNALS
(See Page 129)
LI-5 BOARD
INNER BUS (DDS SO, DDS SI, DDS SCK)
LITIUM BATTERY
CK-8 BOARD
IC651 (See Page 127)
FEATURE CONTROL (DDS CPU)
S651~660
CAMERA DDS, DT FUNCTION SWITCH
LI 3V
DK-2 BOARD
S691~694
CAMERA FUNCTION, COUNTER SWITCH
(See Page 127)
VK-1 BOARD (See Page 151)
S502~507, 509
FUNCTION SWITCH
VTR SW, EJECT
S501, 508
POWER EJECT SWITCH
S951, S952
CAM SW, START/STOP
CAMERA STANDBY, START/STOP SWITCH
CAM SW
J951
REMOTE
EP OUT
J952
EARPHONE
(See Page 152)
RC-26 BOARD
S970, S971
ZOOM W, ZOOM T
ZOOM SWITCH
(See Page 159)
PS-180 BOARD
IC953
DC-DC CONVERTER
CAMERA POWER
32V
15V
CAM 5V
VTR POWER
REG 5V
VIDEO 5V
AUDIO 5V
MT UNREG
CAM UNREG
VTR ON, CAM ON
BATTERY

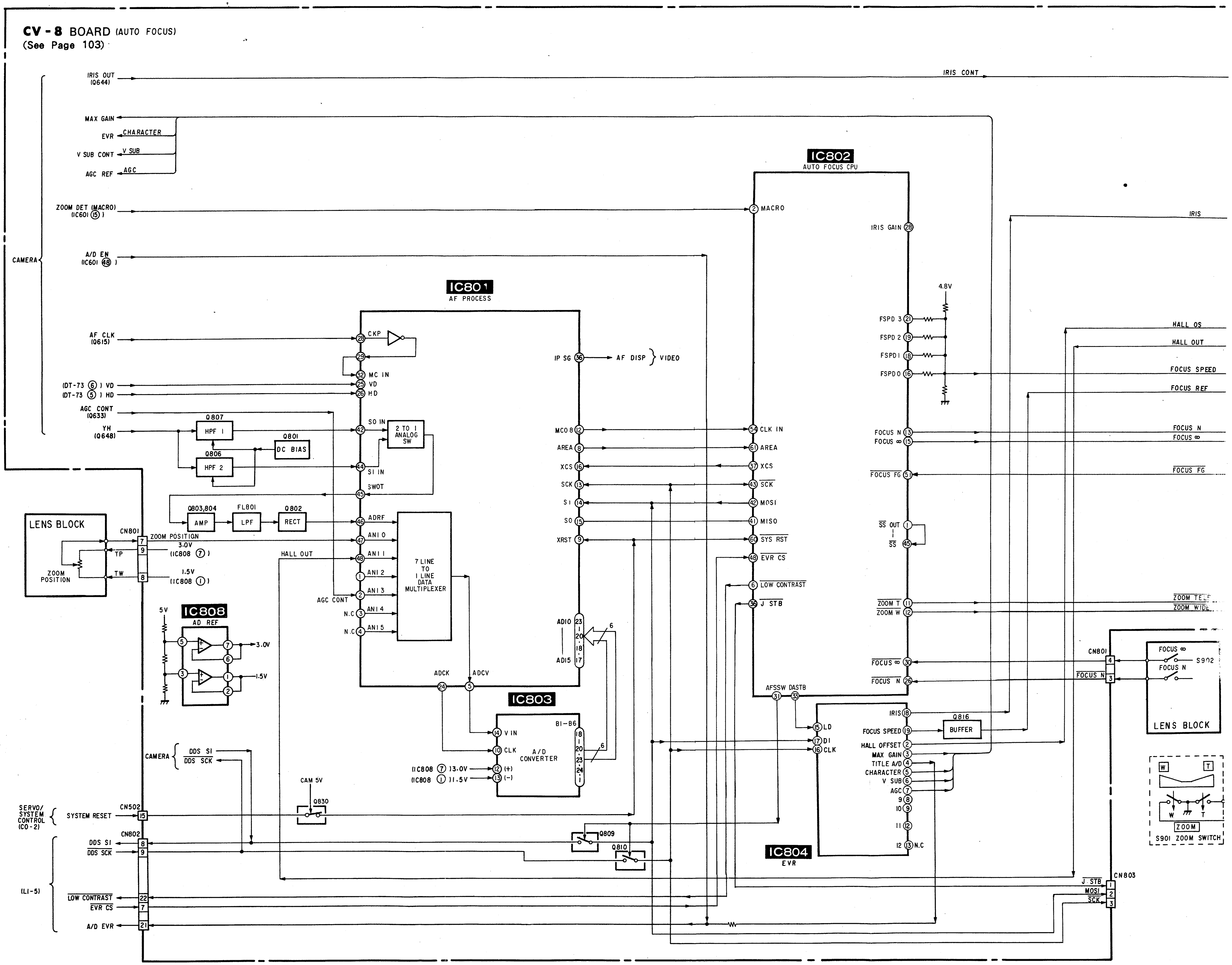
## 3-3. CAMERA BLOCK DIAGRAM

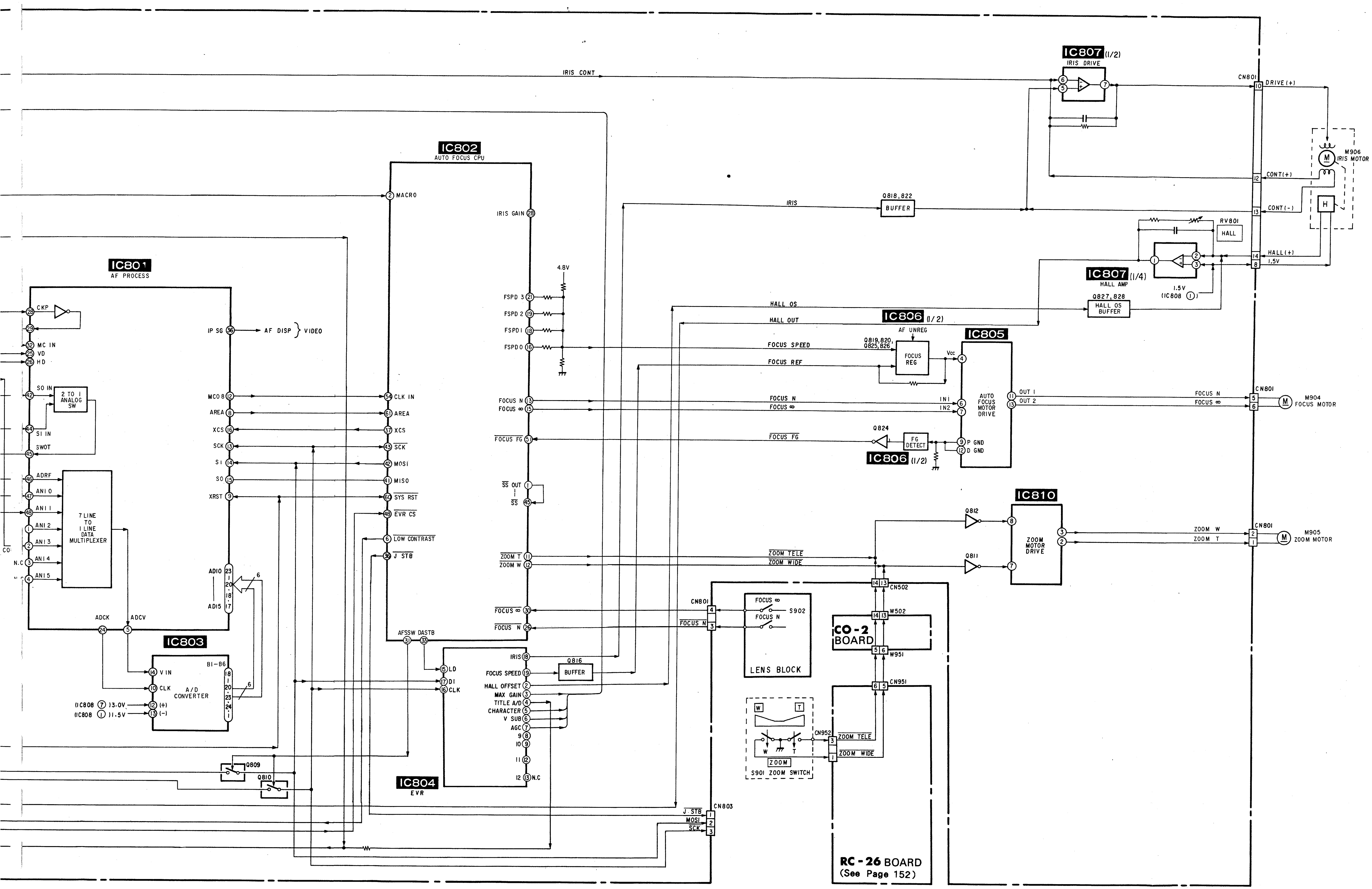

CD-10 BOARD (See Page 89)
CV-8 BOARD (CAMERA) (See Page 99)
DT-73 BOARD (See Page 162)
IC601 CCD IMAGER
IC601 EVR/AUTO WHITE BALANCE CPU
IC603 (1/4) AW COMPARATOR
IC602 (1/2) SWITCH
IC610 RESET
IC603 (1/4) TRIANGLE WAVEFORMER
IC603 (1/4) DC OUT BUFFER
IC602 (1/2) DISCHARGE
IC603 (1/4) CURRENT SORCE
IC608 EVR
IC609 EVR
IC003 SIGNAL SEPARATION AGC/IRIS CONTROL
IC006 SAMPLING
IC004 CCD DEFECT COMPENSATOR
IC005 ROM
IC002 V DRIVE
IC001 TIMING GENERATOR
IC604 SYNC GENERATOR
Q601 BUFFER
Q602,603 V SUB REG
Q605-608 SHUTTER DRIVE
Q609,610 BUFFER
Q623 BLANKING
Q624 BLANKING
Q621 BLANKING
Q625,638 BLANKING PULSE SEP
Q608 CURRENT SORCE
Q620,626-628 AGC DEF
Q632,633 AGC CONT BUFFER
Q635 WINDOW PULSE GENERATOR
Q646,647 AGC DET
Q603 AGC SWITCH
Q615 BUFFER
X601 4MHz OSC
X603 28.6363MHz OSC
SERVO/SYSTEM CONTROL (CO-2)
LINCS POWER
9Vp-p
IC601 ①,②
IC601 ③,⑥
0.68Vp-p
Q601 Ⓢ
9Vp-p 9.5MHz IC601 ⑰
6.4Vp-p IC601 ⑱
6.4Vp-p IC601 ⑲
8.4Vp-p 14.318MHz IC601 ⑯
5Vp-p 4.75MHz DT-73 BOARD ⑮,⑯
DT-73 BOARD ⑧,⑪
DT-73 BOARD ⑨
5Vp-p IC604 ㉙
2Vp-p 28.6363MHz DT-73 BOARD ①
1Vp-p 14.318MHz DT-73 BOARD ③
5Vp-p IC604 ①
IC604 ㉜
5Vp-p IC604 ㉛
CCD OUT
MAX GAIN
AGC REF
S1 OUT
S2 OUT
Y OUT
CS OUT
CS GAIN
CS SLICE
AGC OUT
IRIS OUT
WINDOW
IRIS 6dB
VG
AGC CONT
AUTO FOCUS
CLAMP
S/H
LPF
BLK CLP
MIX
AGC CONT
BAND GAP REG
PHASE COMP
DIVIDER
SYNC GENERATOR


IC006
SAMPLING
(See Page 165)
MX-7 BOARD
IC002
MATRIX
IC001
1H DELAY
IC003
1H DELAY
IC604
SYNC GENERATOR
IC605
PROCESS
SYNC GENERATOR
PHASE COMP
DIVIDER
HOLD BUFFER
BUFFER
S/H
LPF
BLK CLP
MIX
MIX CONT
CS CONT
CLP 0
CLAMP
1H DELAY
SLICE
COMP
MAX
SW
BLANKING
HD MIX
DELAY
MATRIX
YL MATRIX 2
PED
GATE
MODULATOR
1/2
1/2 & ALT
0.18 μsec DELAY
SHP CLP
AGC CONT BUFFER
WINDOW PULSE GENERATOR
AGC DET
AGC SWITCH
IRIS DET
AUTO FOCUS
X603
28.6363MHz
OSC
L602,C622
14.3MHz
BPF
FL601
FL602
FL602,603
Q612
Q615
Q632,633
Q635
Q646,647
Q603
Q648
Q0002,003
Q001
Q634
Q004
Q005
Q006
Q007
Q010
Q0008,011
Q0009(1/2)
Q0008(1/2)
Q629,631
Q640
Q609-611,614
S1 OUT
S2 OUT
Y OUT
DC OUT
CS OUT
CS GAIN
CS SLICE
DE OUT
IRIS OUT
AGC OUT
WINDOW
IRIS 6dB
VG
AGC CONT
SHUTTER EN
Y LPF OUT
S1 IN
S2 IN
C1 GAIN
C2 GAIN
Y1 GAIN
CLP 0
CLP 2
AP CUT
SLICE
AP GAIN
OFFSET
Yγ CONT
CO OUT
DL C1 IN
C1 OUT
DL C2 IN
Y0 OUT
DL Y1 IN
Y1 OUT
DL Y2 IN
R OUT
B OUT
G OUT
R MTX
B MTX
ID
CS GAIN
CS Y OUT
VCS GAIN
YH OUT
YL-YH OUT
Y GAIN
YL IN
AGC MIX
YH
YL
HD
VD
SYNC
BLK
BF
FLD
LALT
CL OUT
CL IN
4FSC
AF CLOCK
DET IN
AGC CONT IN
AGC CONT OUT
XDL1
XDL2
CLP1
CLP2
CLP3
HTS6
EN
DATA
CLK
STB
MODE
DDS SO
DDS SCK
TG STB
BACK LIGHT
SHUTTER EN
CK IN
NT/PAL
B GAIN
R GAIN
B CONT
R CONT
C LEVEL
DELTA B
DELTA R
MAT GAIN1
MAT GAIN2
R-Y
B-Y
CS-Y
CS AGC
B LEVEL CONT
HUE
YL-YH
C BLK
BURST LEVEL
DLE NOISE
DT-73 BOARD ⑮,⑯
DT-73 BOARD ⑧,⑪
DT-73 BOARD ⑨
-73 BOARD ③
4.75MHz
5Vp-p
⑧ 5Vp-p
⑪ 4.7Vp-p
IC604 ㉙
IC604 ①
IC604 ㉜
IC604 ㉛
IC604 ㉚
14.318MHz
1Vp-p
MX-7 BOARD ㉓
0.5Vp-p
MX-7 BOARD ㉖
0.26Vp-p
MX-7 BOARD ㉕
0.6Vp-p
MX-7 BOARD ㊱
0.14Vp-p
IC606 ㊺
0.5Vp-p
IC606 ①
0.28Vp-p
IC606 ㊵
0.5Vp-p
H
V
5V
5V(A)
5V(D)
Vcc
VDD
CLOCK
CLAMP

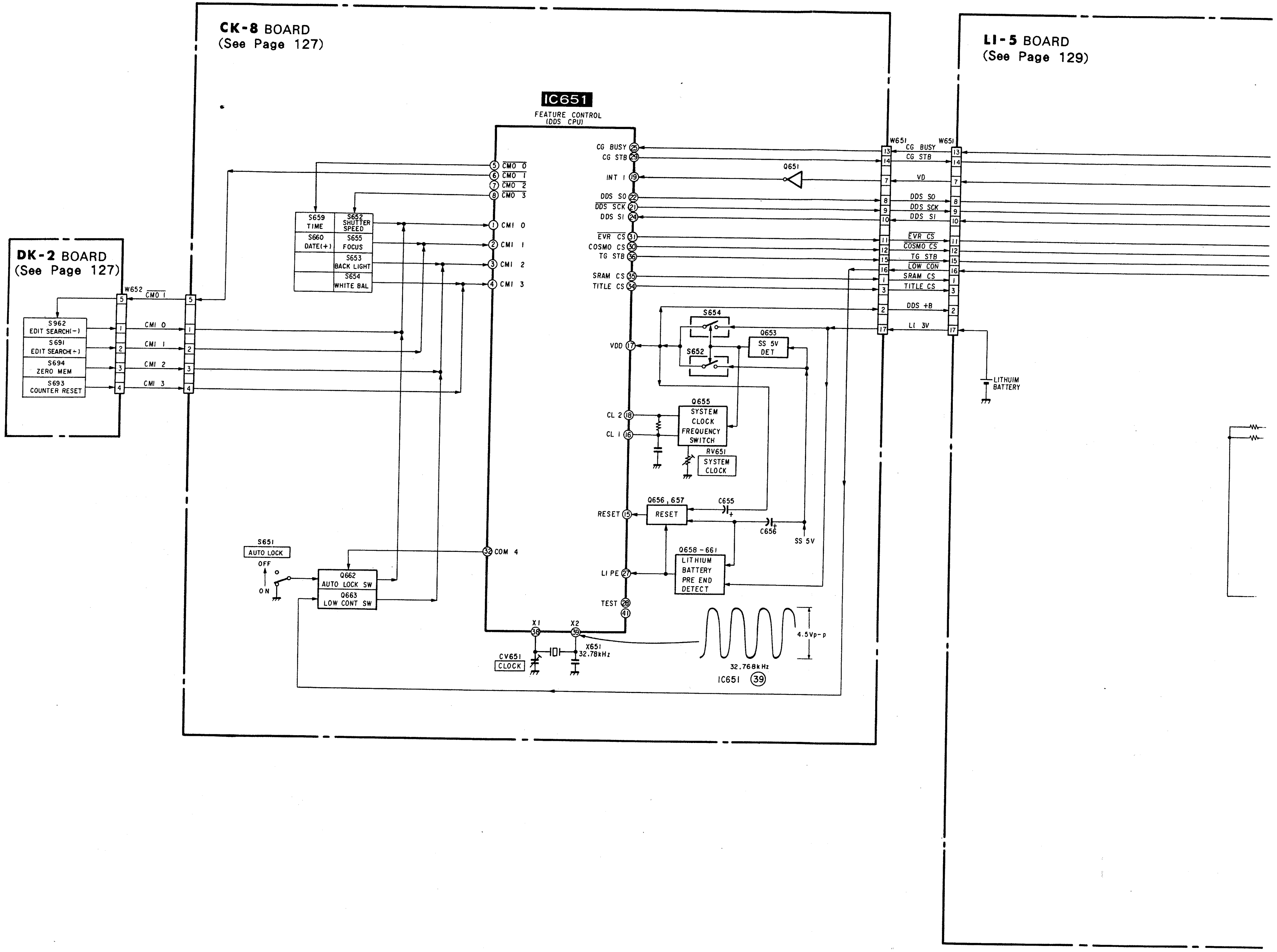

IC001
1H DELAY
IC003
IC605
PROCESS
IC606
ENCODER
CHECK POINT ARRAY
MX-7 BOARD (23)
MX-7 BOARD (26)
MX-7 BOARD (25)
MX-7 BOARD (36)
IC606 (24)
IC606 (20)
IC606 (45)
IC606 (1)
IC606 (40)
CN802
(L1-5)
0.5Vp-p
0.26Vp-p
0.6Vp-p
0.14Vp-p
0.76Vp-p
1Vp-p
0.28Vp-p
0.5Vp-p
CLAMP
BUFFER
MATRIX
BLANKING FADER SUPRESS
SYNC CHARACTER MIX
YL MIX
BURST GATE
MODULATOR
C BLK
CHARACTER
A/D Y
VD
HD
TG STB
DDS S0
DDS SCK
DDS SI
EVR CS

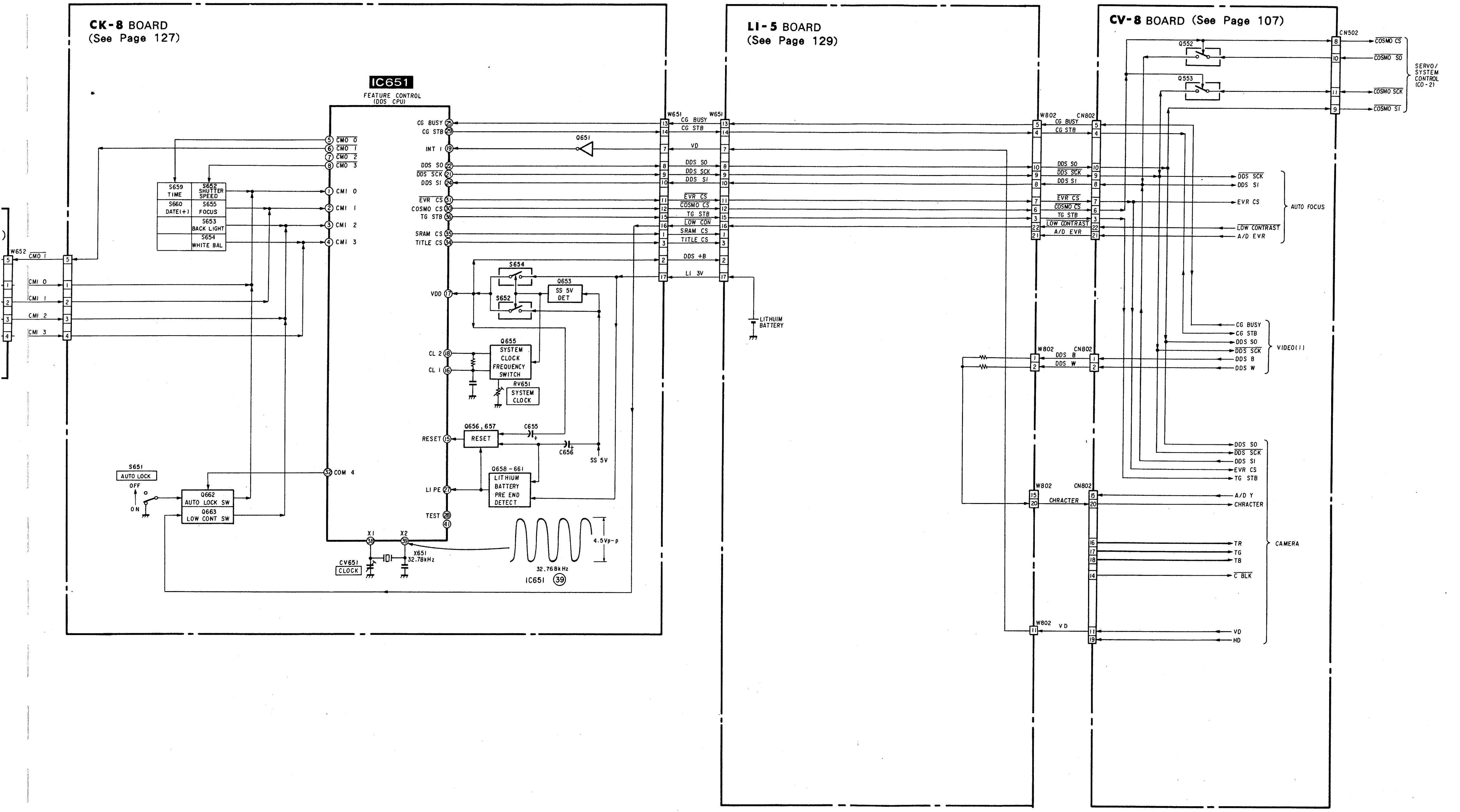
## 3-4. AUTO FOCUS BLOCK DIAGRAM


CV-8 BOARD (AUTO FOCUS)
(See Page 103)
CAMERA
IRIS OUT (Q644)
IRIS CONT
MAX GAIN
EVR
CHARACTER
V SUB CONT
V SUB
AGC REF
AGC
ZOOM DET (MACRO) (IC601 ⑮)
A/D EN (IC601 ㊽)
AF CLK (Q615)
(DT-73 ⑥) VD
(DT-73 ⑤) HD
AGC CONT (Q633)
YH (Q648)
IC801
AF PROCESS
CKP
MC IN
VD
HD
SO IN
SI IN
SWOT
ADRF
ANI 0
ANI 1
ANI 2
ANI 3
ANI 4
ANI 5
N.C
2 TO 1 ANALOG SW
7 LINE TO 1 LINE DATA MULTIPLEXER
IP SG
AF DISP
VIDEO
MCO 8
AREA
XCS
SCK
SI
SO
XRST
AD10
AD15
ADCK
ADCV
Q807
HPF 1
Q806
HPF 2
Q801
DC BIAS
Q803,804
AMP
FL801
LPF
Q802
RECT
LENS BLOCK
ZOOM POSITION
TP
TW
CN801
3.0V (IC808 ⑦)
1.5V (IC808 ①)
HALL OUT
AGC CONT
5V
IC808
AD REF
3.0V
1.5V
IC803
A/D CONVERTER
VIN
CLK
(+)
(–)
B1-B6
(IC808 ⑦) 3.0V
(IC808 ①) 1.5V
6
CAMERA
DDS SI
DDS SCK
CAM 5V
Q830
SERVO/SYSTEM CONTROL (CO-2)
SYSTEM RESET
CN502
CN802
(LI-5)
LOW CONTRAST
EVR CS
A/D EVR
Q809
Q810
IC802
AUTO FOCUS CPU
MACRO
IRIS GAIN
4.8V
FSPD 3
FSPD 2
FSPD 1
FSPD 0
CLK IN
AREA
XCS
SCK
MOSI
MISO
SYS RST
EVR CS
LOW CONTRAST
J STB
FOCUS N
FOCUS ∞
FOCUS FG
SS OUT
SS
ZOOM T
ZOOM W
FOCUS ∞
FOCUS N
AFSSW
DASTB
IC804
EVR
IRIS
FOCUS SPEED
HALL OFFSET
MAX GAIN
TITLE A/D
CHARACTER
V SUB
AGC
LD
DI
CLK
N.C
Q816
BUFFER
IRIS
HALL OS
HALL OUT
FOCUS SPEED
FOCUS REF
FOCUS N
FOCUS ∞
FOCUS FG
ZOOM TELE
ZOOM WIDE
CN801
FOCUS ∞
FOCUS N
S902
LENS BLOCK
W
T
ZOOM
S901 ZOOM SWITCH
CN803
J STB
MOSI
SCK

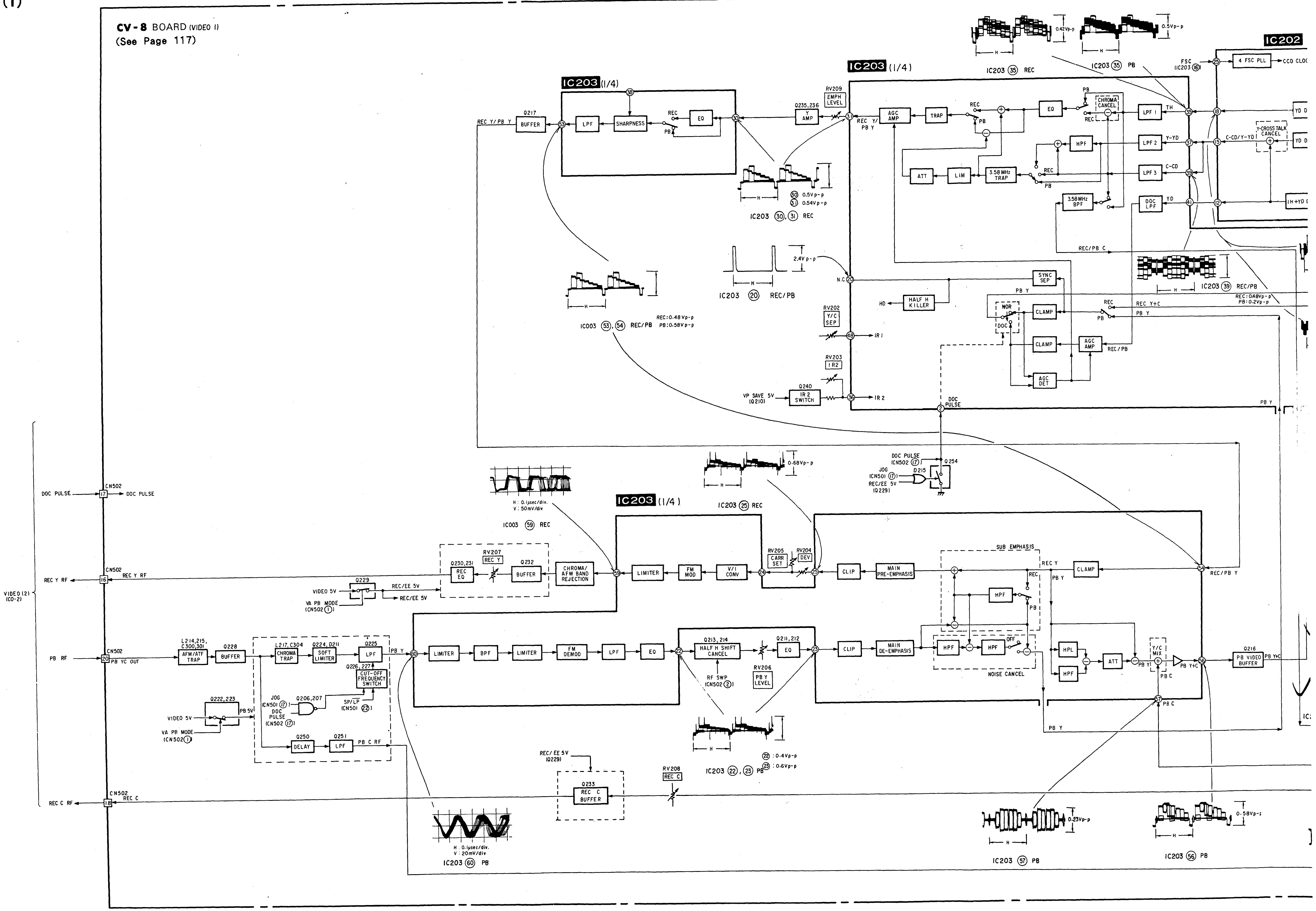

IC801
AF PROCESS
CKP
MC IN
VD
HD
SO IN
2 TO 1 ANALOG SW
SI IN
SWOT
ADRF
ANI 0
ANI 1
ANI 2
ANI 3
ANI 4
ANI 5
N.C
7 LINE TO 1 LINE DATA MULTIPLEXER
IP SG
AF DISP
VIDEO
MCO 8
AREA
XCS
SCK
SI
SO
XRST
ADI0
ADI5
ADCK
ADCV
IC803
V IN
CLK
A/D CONVERTER
B1-B6
(IC808 ⑦) 13.0V
(IC808 ①) 11.5V
IC802
AUTO FOCUS CPU
MACRO
IRIS GAIN
4.8V
FSPD 3
FSPD 2
FSPD 1
FSPD 0
CLK IN
AREA
XCS
SCK
MOSI
MISO
SYS RST
EVR CS
LOW CONTRAST
J STB
FOCUS N
FOCUS ∞
FOCUS FG
SS OUT
SS
ZOOM T
ZOOM W
FOCUS ∞
FOCUS N
AFSSW DASTB
IC804
EVR
LD
DI
CLK
IRIS
FOCUS SPEED
HALL OFFSET
MAX GAIN
TITLE A/D
CHARACTER
V SUB
AGC
N.C
Q816
BUFFER
Q809
Q810
IRIS CONT
IC807 (1/2)
IRIS DRIVE
CN801
DRIVE(+)
M906
IRIS MOTOR
CONT(+)
CONT(-)
H
IRIS
Q818,822
BUFFER
RV801
HALL
HALL(+)
1.5V
IC807 (1/4)
HALL AMP
1.5V
(IC808 ①)
Q827,828
HALL OS BUFFER
HALL OS
HALL OUT
IC806 (1/2)
AF UNREG
FOCUS SPEED
Q819,820,
Q825,826
FOCUS REG
FOCUS REF
Vcc
IC805
AUTO FOCUS MOTOR DRIVE
IN1
IN2
OUT 1
OUT 2
P GND
D GND
FOCUS N
FOCUS ∞
CN801
M904
FOCUS MOTOR
FOCUS FG
Q824
FG DETECT
IC806 (1/2)
IC810
Q812
Q811
ZOOM MOTOR DRIVE
ZOOM TELE
ZOOM WIDE
ZOOM W
ZOOM T
CN801
M905
ZOOM MOTOR
CN502
W502
CO-2 BOARD
W951
CN951
CN801
FOCUS ∞
FOCUS N
S902
LENS BLOCK
W
T
ZOOM
S901 ZOOM SWITCH
CN952
ZOOM TELE
ZOOM WIDE
RC-26 BOARD
(See Page 152)
CN803
J STB
MOSI
SCK

## 3-5. CAMERA FUNCTION BLOCK DIAGRAM

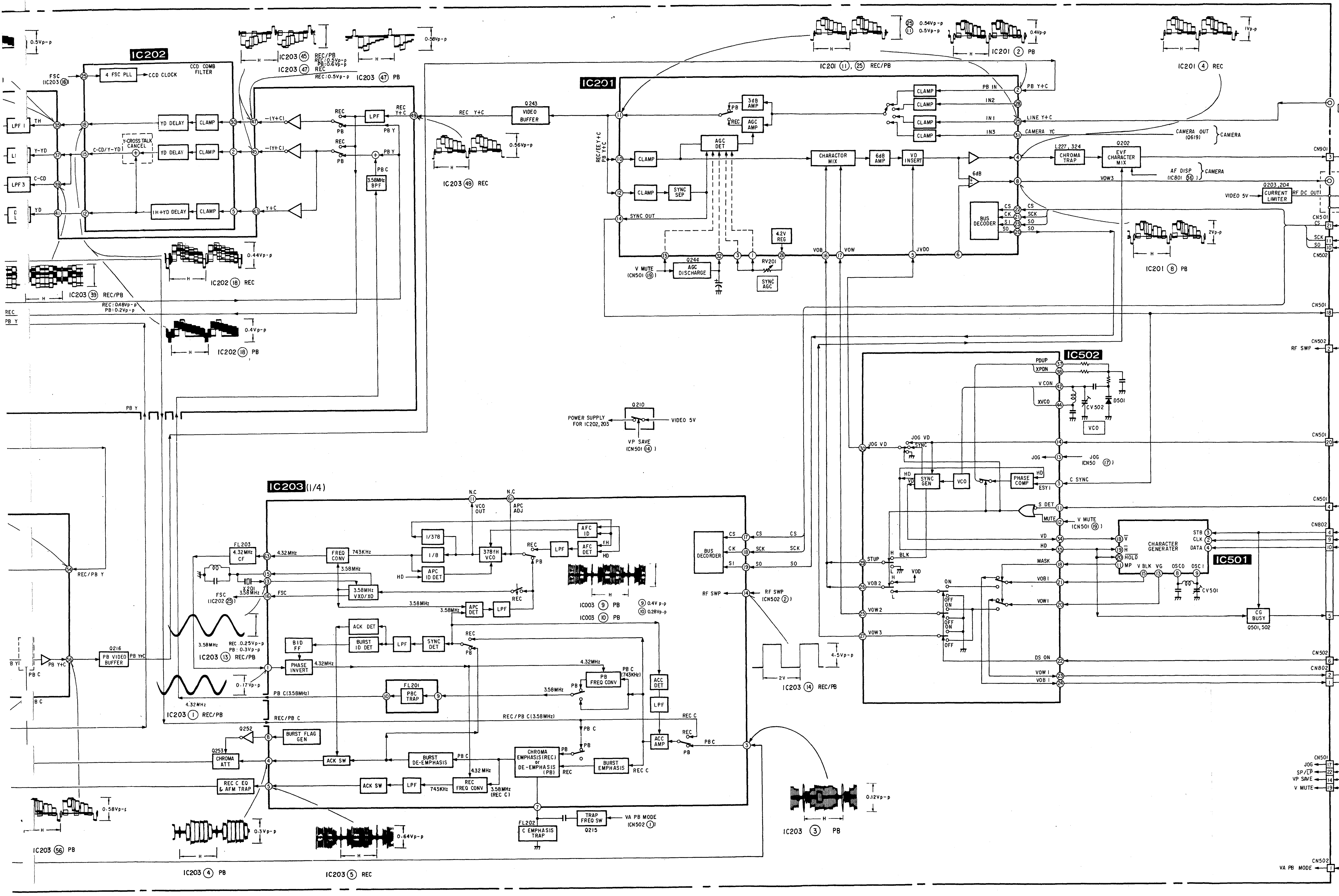

CK-8 BOARD
(See Page 127)
LI-5 BOARD
(See Page 129)
DK-2 BOARD
(See Page 127)
IC651
FEATURE CONTROL
(DDS CPU)
CMO 0
CMO 1
CMO 2
CMO 3
CMI 0
CMI 1
CMI 2
CMI 3
CG BUSY
CG STB
INT 1
DDS SO
DDS SCK
DDS SI
EVR CS
COSMO CS
TG STB
SRAM CS
TITLE CS
VDD
CL 2
CL 1
RESET
LI PE
TEST
COM 4
X1
X2
W651
W652
VD
LOW CON
DDS +B
LI 3V
Q651
S659 TIME
S652 SHUTTER SPEED
S660 DATE(+)
S655 FOCUS
S653 BACK LIGHT
S654 WHITE BAL
S962 EDIT SEARCH(−)
S691 EDIT SEARCH(+)
S694 ZERO MEM
S693 COUNTER RESET
S654
S652
Q653 SS 5V DET
Q655 SYSTEM CLOCK FREQUENCY SWITCH
RV651 SYSTEM CLOCK
Q656, 657 RESET
C655
C656
SS 5V
Q658 - 661 LITHIUM BATTERY PRE END DETECT
S651 AUTO LOCK
OFF
ON
Q662 AUTO LOCK SW
Q663 LOW CONT SW
CV651 CLOCK
X651 32.78kHz
4.5Vp-p
32.768kHz
IC651 ㊴
LITHUIM BATTERY


CK-8 BOARD (See Page 127)
LI-5 BOARD (See Page 129)
CV-8 BOARD (See Page 107)
IC651
FEATURE CONTROL (DDS CPU)
CG BUSY
CG STB
INT 1
DDS SO
DDS SCK
DDS SI
EVR CS
COSMO CS
TG STB
SRAM CS
TITLE CS
VDD
CL 2
CL 1
RESET
LI PE
TEST
COM 4
X1
X2
CMO 0
CMO 1
CMO 2
CMO 3
CMI 0
CMI 1
CMI 2
CMI 3
S659 TIME
S652 SHUTTER SPEED
S660 DATE(+)
S655 FOCUS
S653 BACK LIGHT
S654 WHITE BAL
W652
Q651
S654
S652
Q653 SS 5V DET
Q655 SYSTEM CLOCK FREQUENCY SWITCH
RV651 SYSTEM CLOCK
Q656, 657 RESET
C655
C656
SS 5V
Q658 - 661 LITHIUM BATTERY PRE END DETECT
S651 AUTO LOCK
OFF
ON
Q662 AUTO LOCK SW
Q663 LOW CONT SW
CV651 CLOCK
X651 32.78kHz
32.768kHz
4.5Vp-p
IC651 (39)
W651
VD
LOW CON
DDS +B
LI 3V
LITHUIM BATTERY
W802
CN802
LOW CONTRAST
A/D EVR
DDS B
DDS W
CHRACTER
CN502
Q552
Q553
COSMO CS
COSMO SO
COSMO SCK
COSMO SI
SERVO/ SYSTEM CONTROL (CO-21)
AUTO FOCUS
VIDEO(1)
CAMERA
A/D Y
TR
TG
TB
C BLK
HD

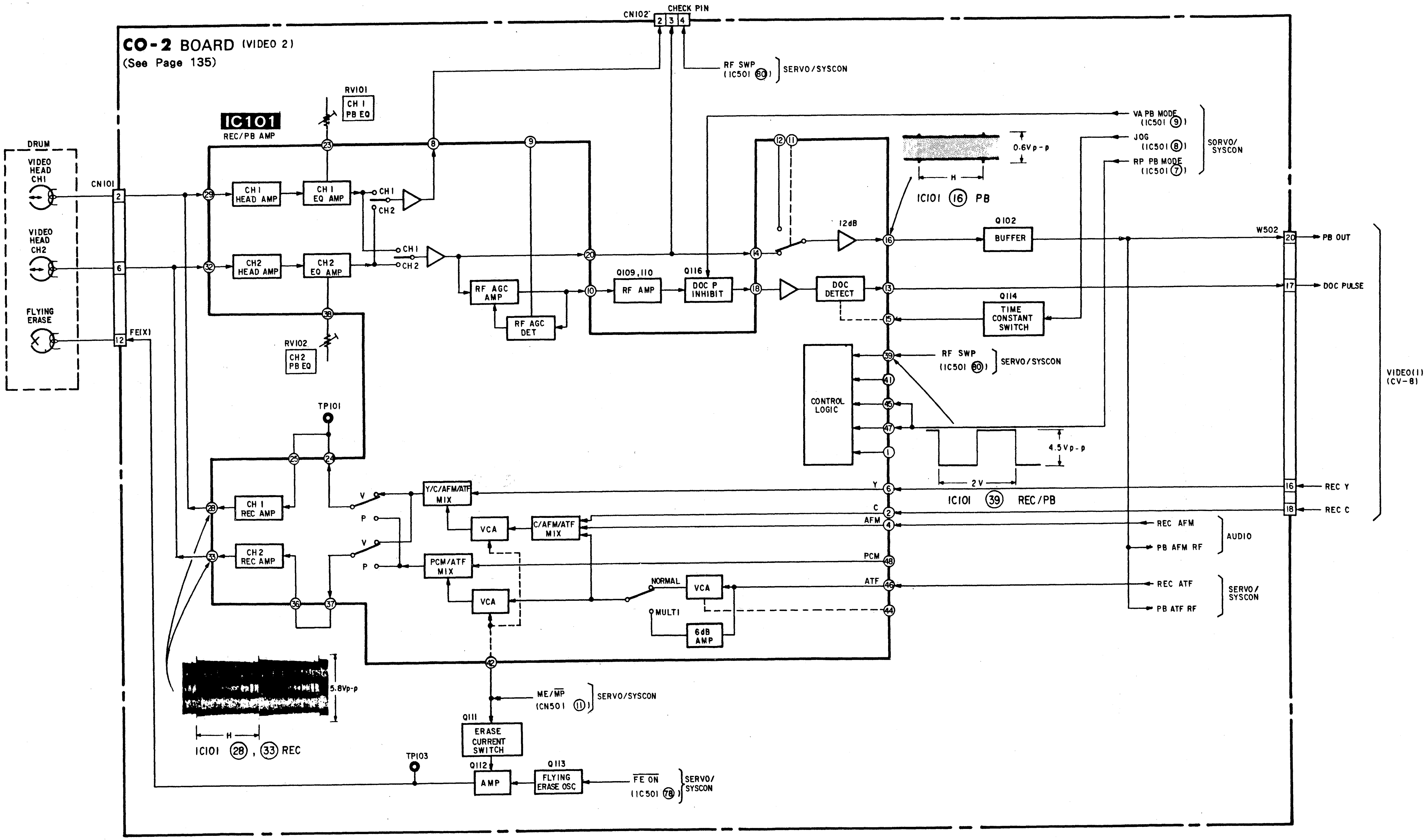
## 3-6. VIDEO BLOCK DIAGRAM (1)



CV-8 BOARD (VIDEO I)
(See Page 117)
IC203 (1/4)
IC202
4 FSC PLL
CCD CLOCK
Q217 BUFFER
REC Y/PB Y
LPF
SHARPNESS
EQ
REC
PB
RV209 EMPH LEVEL
Q235,236 Y AMP
REC Y/PB Y
AGC AMP
TRAP
CHROMA CANCEL
LPF 1
LPF 2
LPF 3
DOC LPF
TH
Y-YD
C-CD
YD
FSC (IC203 ⑯)
Y-CROSS TALK CANCEL
C-CD/Y-YD
ATT
LIM
3.58MHz TRAP
3.58MHz BPF
HPF
REC/PB C
SYNC SEP
HALF H KILLER
HD
NOR
DOC
CLAMP
AGC AMP
AGC DET
REC Y+C
PB Y
REC/PB
N.C
RV202 Y/C SEP
IR 1
RV203 IR2
Q240 IR 2 SWITCH
VP SAVE 5V (Q210)
IR 2
DOC PULSE
0.42Vp-p
0.5Vp-p
IC203 ㉟ REC
IC203 ㉟ PB
㉚ 0.5Vp-p
㉛ 0.54Vp-p
IC203 ㉚,㉛ REC
2.4V p-p
IC203 ⑳ REC/PB
REC:0.48Vp-p
PB:0.58Vp-p
IC003 (53),(54) REC/PB
IC203 ㊴ REC/PB
REC:0.48Vp-p
PB:0.2Vp-p
DOC PULSE (CN502 ⑰)
JOG (CN501 ⑰)
D215
Q254
REC/EE 5V (Q229)
0.68Vp-p
IC203 ㉕ REC
H: 0.1µsec/div.
V: 50mV/div
IC003 (59) REC
CN502
DOC PULSE
REC Y RF
PB RF
PB YC OUT
REC C RF
VIDEO (2) (CO-2)
RV207 REC Y
Q230,231 REC EQ
Q232 BUFFER
CHROMA/AFM BAND REJECTION
Q229
VIDEO 5V
REC/EE 5V
VA PB MODE (CN502 ①)
LIMITER
FM MOD
V/I CONV
RV205 CARR SET
RV204 DEV
CLIP
MAIN PRE-EMPHASIS
SUB EMPHASIS
REC Y
PB Y
CLAMP
REC/PB Y
L214,215, C300,301 AFM/ATF TRAP
Q228 BUFFER
L217,C304 CHROMA TRAP
Q224,D211 SOFT LIMITER
Q225 LPF
Q226,227 CUT-OFF FREQUENCY SWITCH
JOG (CN501 ⑰)
Q206,207
DOC PULSE (CN502 ⑰)
SP/LP (CN501 ㉓)
Q250 DELAY
Q251 LPF
PB C RF
Q222,223
PB 5V
LIMITER
BPF
FM DEMOD
EQ
Q213,214 HALF H SHIFT CANCEL
Q211,212 EQ
RV206 PB Y LEVEL
RF SWP (CN502 ②)
MAIN DE-EMPHASIS
HPF
OFF
NOISE CANCEL
HPL
ATT
Y/C MIX
PB Y+C
PB C
Q216 PB VIDEO BUFFER
REC/EE 5V (Q229)
Q233 REC C BUFFER
RV208 REC C
㉒ : 0.4Vp-p
㉓ : 0.6Vp-p
IC203 ㉒,㉓ PB
H: 0.1µsec/div.
V: 20mV/div
IC203 (60) PB
0.23Vp-p
IC203 (57) PB
0.58Vp-p
IC203 (56) PB

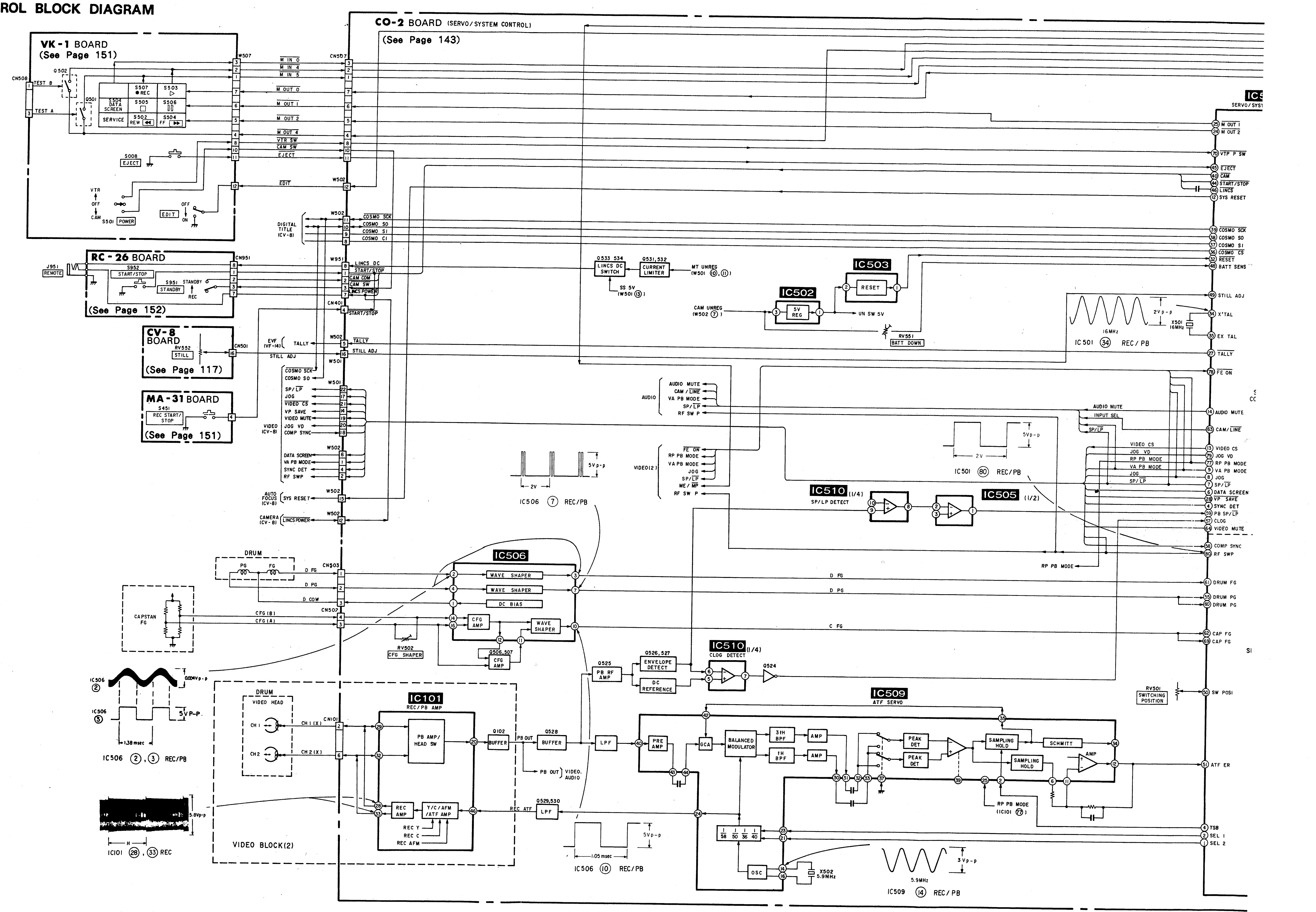

IC202
4 FSC PLL
CCD CLOCK
CCD COMB FILTER
YD DELAY
CLAMP
Y-CROSS TALK CANCEL
C-CD/Y-YD1
1H+YD DELAY
FSC (IC203 ⑯)
LPF 1
LPF 3
TH
Y-YD
C-CD
YD
IC203 ㊺ REC/PB
IC203 ㊼ REC
IC203 ㊼ PB
IC202 ⑱ REC
IC202 ⑱ PB
IC203 ㊴ REC/PB
REC:0.48Vp-p PB:0.2Vp-p
0.44Vp-p
0.4Vp-p
0.58Vp-p
0.56Vp-p
0.5Vp-p
IC203 ㊾ REC
3.58MHz BPF
Q243 VIDEO BUFFER
REC Y+C
PB Y
PB C
IC201
3dB AMP
AGC AMP
AGC DET
CLAMP
SYNC SEP
SYNC OUT
CHARACTOR MIX
6dB AMP
VD INSERT
6dB
BUS DECODER
4.2V REG
Q244 AGC DISCHARGE
RV201
SYNC AGC
V MUTE (CN501 ⑲)
VOB
VOW
JVDD
PB IN
IN2
IN1
IN3
PB Y+C
LINE Y+C
CAMERA YC
CAMERA OUT (Q619)
CAMERA
L227, 324 CHROMA TRAP
Q202 EVF CHARACTER MIX
AF DISP (IC801 ㊶)
VOW3
VIDEO 5V
Q203, 204 CURRENT LIMITER
RF DC OUT
IC201 ⑪, ㉕ REC/PB
IC201 ② PB
IC201 ④ REC
IC201 ⑧ PB
㉕ 0.54Vp-p
⑪ 0.5Vp-p
0.4Vp-p
1Vp-p
2Vp-p
J202 (1/2) VIDEO IN
J201 (1/2) VIDEO OUT
RFU DC OUT
CN901
VIDEO OUT
EVF
CN501
VIDEO CS
COSMO SCK
COSMO SO
SYSCON
CN502
COMP SYNC (SERVO)
RF SWP
RF SWP (SERVO)
SERVO/SYSCON
Q210
POWER SUPPLY FOR IC202, 203
VIDEO 5V
VP SAVE (CN501 ⑭)
IC502
PDUP
XPDN
V CON
XVCO
CV502
D501
VCO
JOG VD
SYNC
JOG
JOG (CN50 ⑰)
SYNC GEN
PHASE COMP
C SYNC
S DET
MUTE
V MUTE (CN501 ⑲)
VD
HD
MASK
VOB1
VOW1
STUP
BLK
VOB2
VOW2
VOW3
DS ON
IC501
CHARACTER GENERATER
STB
CLK
DATA
HOLD
MP
V BLK
VG
OSCO
OSCI
CV501
CG BUSY Q501, 502
CN802
CG STB
DDS SCK
DDS SO
DIGITAL TITLE
CG BUSY
SYNC DET
SERVO/SYSCON (CO-2)
JOG VD (SERVO)
DATA SCREEN
SERVO/SYSCON
DDS W
DDS B
DIGITAL TITLE
JOG
SP/LP
VP SAVE
V MUTE
VIDEO MUTE
VA PB MODE
IC203 (1/4)
N.C
VCO OUT
APC ADJ
FL203 4.32MHz CF
4.32MHz
FREQ CONV
743KHz
1/378
1/8
378fH VCO
AFC ID
AFC DET
APC ID DET
3.58MHz VXO/XO
X201 3.58MHz
FSC (IC202 ㉕)
APC DET
LPF
ACK DET
BURST ID DET
SYNC DET
BID FF
PHASE INVERT
FL201 PBC TRAP
PB FREQ CONV
ACC DET
ACC AMP
BURST FLAG GEN
Q252
Q253 CHROMA ATT
ACK SW
BURST DE-EMPHASIS
CHROMA EMPHASIS (REC) or DE-EMPHASIS (PB)
BURST EMPHASIS
REC FREQ CONV
REC C EQ & AFM TRAP
FL202 C EMPHASIS TRAP
TRAP FREQ SW Q215
VA PB MODE (CN502 ①)
Q216 PB VIDEO BUFFER
REC/PB Y
REC/PB C
REC/PB C (3.58MHz)
PB C (3.58MHz)
BUS DECORDER
CS
CK
SI
SCK
SO
RF SWP (CN502 ②)
IC203 ⑭ REC/PB
4.5Vp-p
2V
IC203 ⑬ REC/PB
REC 0.25Vp-p PB: 0.3Vp-p
3.58MHz
IC203 ① REC/PB
0.17Vp-p
IC003 ⑨ PB
IC003 ⑩ PB
⑨ 0.4V p-p
⑩ 0.28Vp-p
IC203 ③ PB
0.12Vp-p
IC203 ㊻ PB
0.58Vp-p
IC203 ④ PB
0.3Vp-p
IC203 ⑤ REC
0.64Vp-p
H

## 3-7. VIDEO BLOCK DIAGRAM (2)

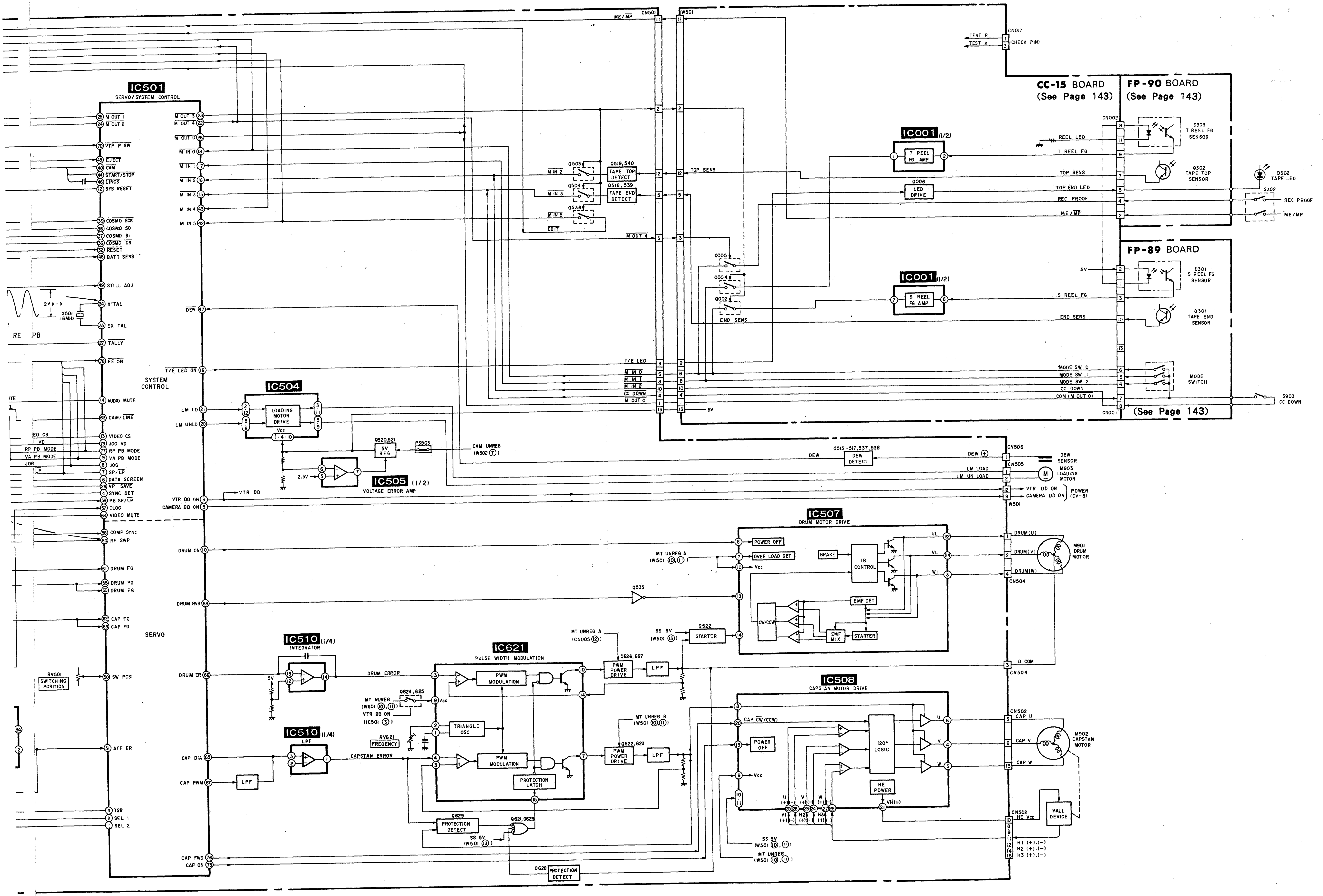


CO-2 BOARD (VIDEO 2)
(See Page 135)
CN102
CHECK PIN
2 3 4
RF SWP
(IC501 80)
SERVO/SYSCON
RV101
CH 1
PB EQ
IC101
REC/PB AMP
DRUM
VIDEO HEAD CH1
VIDEO HEAD CH2
FLYING ERASE
CN101
2
6
12
FE(X)
CH 1 HEAD AMP
CH 1 EQ AMP
CH2 HEAD AMP
CH2 EQ AMP
CH1
CH2
RF AGC AMP
RF AGC DET
RV102
CH2 PB EQ
Q109,110
RF AMP
Q116
DOC P INHIBIT
12dB
DOC DETECT
0.6Vp-p
H
IC101 16 PB
Q102
BUFFER
Q114
TIME CONSTANT SWITCH
VA PB MODE (IC501 9)
JOG (IC501 8)
RP PB MODE (IC501 7)
SERVO/SYSCON
W502
20
PB OUT
17
DOC PULSE
CONTROL LOGIC
RF SWP (IC501 80)
SERVO/SYSCON
4.5Vp-p
2V
IC101 39 REC/PB
VIDEO(1) (CV-81)
16
REC Y
18
REC C
TP101
CH 1 REC AMP
CH 2 REC AMP
V
P
Y/C/AFM/ATF MIX
VCA
C/AFM/ATF MIX
PCM/ATF MIX
VCA
Y
C
AFM
PCM
ATF
NORMAL
MULTI
VCA
6dB AMP
REC AFM
PB AFM RF
AUDIO
REC ATF
PB ATF RF
SERVO/SYSCON
5.8Vp-p
H
IC101 28, 33 REC
ME/MP
(CN501 11)
SERVO/SYSCON
Q111
ERASE CURRENT SWITCH
Q112
AMP
TP103
Q113
FLYING ERASE OSC
FE ON
(IC501 78)
SERVO/SYSCON

## 3-8. SERVO, SYSTEM CONTROL BLOCK DIAGRAM



VK-1 BOARD
(See Page 151)
CN508
TEST B
TEST A
Q502
Q501
S507 ● REC
S503
S504 DATA SCREEN
S505
S506
SERVICE
S502 REW
S504 FF
S008 EJECT
VTR
OFF
CAM
S501 POWER
EDIT
OFF
ON
W507
M IN 0
M IN 4
M IN 5
M OUT 0
M OUT 1
M OUT 2
M OUT 4
VTR SW
CAM SW
EJECT
EDIT
CN507
W502
DIGITAL TITLE (CV-8)
COSMO SCK
COSMO SO
COSMO SI
COSMO CI
RC-26 BOARD
J951 REMOTE
S952 START/STOP
S951 STANDBY
STANDBY
REC
(See Page 152)
CN951
W951
LINCS DC
START/STOP
CAM COM
CAM SW
LINCS POWER
CN401
START/STOP
CV-8 BOARD
RV552 STILL
(See Page 117)
CN501
EVF (VF-14)
TALLY
STILL ADJ
MA-31 BOARD
S451 REC START/STOP
(See Page 151)
W501
COSMO SCK
COSMO SO
SP/LP
JOG
VIDEO CS
VP SAVE
VIDEO MUTE
JOG VD
COMP SYNC
VIDEO (CV-8)
DATA SCREEN
VA PB MODE
SYNC DET
RF SWP
AUTO FOCUS (CV-8)
SYS RESET
CAMERA (CV-8)
LINCS POWER
CO-2 BOARD (SERVO/SYSTEM CONTROL)
(See Page 143)
Q533, 534 LINCS DC SWITCH
Q531, 532 CURRENT LIMITER
MT UNREG (W501 ⑩, ⑪)
SS 5V (W501 ⑬)
IC503 RESET
IC502 5V REG
CAM UNREG (W502 ⑦)
UN SW 5V
RV551 BATT DOWN
16MHz
2Vp-p
X501 16MHz
IC501 ㉞ REC/PB
AUDIO
AUDIO MUTE
CAM/LINE
VA PB MODE
SP/LP
RF SW P
VIDEO(2)
FE ON
RP PB MODE
VA PB MODE
JOG
SP/LP
ME/MP
RF SW P
5Vp-p
2V
IC501 (80) REC/PB
IC510 (1/4) SP/LP DETECT
IC505 (1/2)
2V
5Vp-p
IC506 ⑦ REC/PB
AUDIO MUTE
INPUT SEL
SP/LP
VIDEO CS
JOG VD
RP PB MODE
VA PB MODE
JOG
SP/LP
IC5
SERVO/SYST
M OUT 1
M OUT 2
VTR P SW
EJECT
CAM
START/STOP
LINCS
SYS RESET
COSMO SCK
COSMO SO
COSMO SI
COSMO CS
RESET
BATT SENS
STILL ADJ
X'TAL
EX TAL
TALLY
FE ON
AUDIO MUTE
CAM/LINE
VIDEO CS
JOG VD
RP PB MODE
VA PB MODE
JOG
SP/LP
DATA SCREEN
VP SAVE
SYNC DET
PB SP/LP
CLOG
VIDEO MUTE
COMP SYNC
RF SWP
DRUM FG
DRUM PG
DRUM PG
CAP FG
CAP FG
SW POSI
ATF ER
TSB
SEL 1
SEL 2
RP PB MODE
DRUM
PG
FG
CN503
D FG
D PG
D COM
CAPSTAN FG
CN502
CFG (B)
CFG (A)
IC506
WAVE SHAPER
WAVE SHAPER
DC BIAS
CFG AMP
WAVE SHAPER
RV502 CFG SHAPER
Q506, 507 CFG AMP
D FG
D PG
C FG
Q525 PB RF AMP
Q526, 527 ENVELOPE DETECT
DC REFERENCE
IC510 (1/4) CLOG DETECT
Q524
RV501 SWITCHING POSITION
IC506 ②
0.004Vp-p
IC506 ⑤
5Vp-p
1.38msec
IC506 ②, ③ REC/PB
DRUM VIDEO HEAD
CH 1
CH 2
CH 1 (X)
CH 2 (X)
CN101
IC101 REC/PB AMP
PB AMP/HEAD SW
REC AMP
Y/C/AFM /ATF AMP
REC Y
REC C
REC AFM
Q102 BUFFER
PB OUT
Q528 BUFFER
PB OUT VIDEO, AUDIO
REC ATF
Q529, 530 LPF
LPF
5.8Vp-p
H
IC101 ㉘, ㉝ REC
VIDEO BLOCK(2)
5Vp-p
1.05msec
IC506 ⑩ REC/PB
IC509 ATF SERVO
PRE AMP
GCA
BALANCED MODULATOR
3fH BPF
fH BPF
AMP
AMP
PEAK DET
PEAK DET
SAMPLING HOLD
SAMPLING HOLD
SCHMITT
AMP
RP PB MODE (IC101 ⑰)
OSC
X502 5.9MHz
3Vp-p
5.9MHz
IC509 ⑭ REC/PB
SI


IC501
SERVO/SYSTEM CONTROL
M OUT 1
M OUT 2
VTP P SW
EJECT
CAM
START/STOP
LINCS
SYS RESET
COSMO SCK
COSMO SO
COSMO SI
COSMO CS
RESET
BATT SENS
STILL ADJ
X'TAL
EX TAL
X501 16MHz
2Vp-p
TALLY
FE ON
AUDIO MUTE
CAM/LINE
VIDEO CS
JOG VD
RP PB MODE
VA PB MODE
JOG
SP/LP
DATA SCREEN
VP SAVE
SYNC DET
PB SP/LP
CLOG
VIDEO MUTE
COMP SYNC
RF SWP
DRUM FG
DRUM PG
CAP FG
SW POSI
ATF ER
TSB
SEL 1
SEL 2
RV501 SWITCHING POSITION
SERVO
SYSTEM CONTROL
M OUT 3
M OUT 4
M OUT 0
M IN 0
M IN 1
M IN 2
M IN 3
M IN 4
M IN 5
DEW
T/E LED ON
LM LD
LM UNLD
VTR DD ON
CAMERA DD ON
DRUM ON
DRUM RVS
DRUM ER
CAP DIA
CAP PWM
CAP FWD
CAP ON
ME/MP
CN501
W501
Q503
Q504
Q536
Q519,540 TAPE TOP DETECT
Q518,539 TAPE END DETECT
EDIT
TOP SENS
END SENS
Q005
Q004
Q002
T/E LED
CC DOWN
5V
TEST B
TEST A
CN017 (CHECK PIN)
CC-15 BOARD (See Page 143)
FP-90 BOARD (See Page 143)
FP-89 BOARD
CN002
CN001
IC001 (1/2)
T REEL FG AMP
S REEL FG AMP
Q006 LED DRIVE
REEL LED
T REEL FG
TOP END LED
REC PROOF
S REEL FG
MODE SW 0
MODE SW 1
MODE SW 2
COM (M OUT 0)
D303 T REEL FG SENSOR
Q302 TAPE TOP SENSOR
D302 TAPE LED
S302
D301 S REEL FG SENSOR
Q301 TAPE END SENSOR
MODE SWITCH
S903 CC DOWN
(See Page 143)
IC504
LOADING MOTOR DRIVE
Vcc
Q520,521 5V REG
PS503
CAM UNREG (W502 ⑦)
IC505 (1/2)
VOLTAGE ERROR AMP
2.5V
VTR DD
Q515-517,537,538 DEW DETECT
CN506
DEW SENSOR
CN505
LM LOAD
LM UN LOAD
M903 LOADING MOTOR
VTR DD ON
CAMERA DD ON
POWER (CV-8)
IC507
DRUM MOTOR DRIVE
POWER OFF
OVER LOAD DET
BRAKE
IB CONTROL
EMF DET
CW/CCW
EMF MIX
STARTER
MT UNREG A (W501 ⑩,⑪)
Q535
SS 5V (W501 ⑬)
Q522 STARTER
DRUM(U)
DRUM(V)
DRUM(W)
CN504
M901 DRUM MOTOR
D COM
IC510 (1/4) INTEGRATOR
IC510 (1/4) LPF
IC621
PULSE WIDTH MODULATION
PWM MODULATION
TRIANGLE OSC
PROTECTION LATCH
DRUM ERROR
CAPSTAN ERROR
MT NUREG (W501 ⑩,⑪)
VTR DD ON (IC501 ③)
Q624,625
RV621 FREQENCY
MT UNREG A (CN005 ⑫)
Q626,627 PWM POWER DRIVE
Q622,623 PWM POWER DRIVE
MT UNREG B (W501 ⑩⑪)
LPF
Q629 PROTECTION DETECT
SS 5V (W501 ⑬)
Q621,Q623
Q628 PROTECTION DETECT
IC508
CAPSTAN MOTOR DRIVE
CAP CW/CCW
POWER OFF
120° LOGIC
HE POWER
VH(+)
SS 5V (W501 ⑩,⑪)
MT UNREG (W501 ⑩,⑪)
CN502
CAP U
CAP V
CAP W
M902 CAPSTAN MOTOR
HE Vcc
HALL DEVICE
H1 (+),(-)
H2 (+),(-)
H3 (+),(-)

]

## 3-9. SYSTEM CONTROL SECTION FUNCTION DESCRIPTION

The system control section consists of the following four microcomputers:

- Mode/mechanism control microcomputer CXP80116
- DDS microcomputer μPD7508BGB
- EVR microcomputer MC68HC05N4FU
- AF microcomputer MC68HC05C4FU

### 3-9-1. Mode/Mechanism Control Microcomputer CXP80116 (IC501 on CO-2 Board)

**1. Function description**

1) Power ON/OFF control
2) Key matrix read
   (Playback, record, fast-forward, rewind, pause, stop, data screen)
3) Reading of other keys
   (Power (camera/off/video), cassette eject)
4) Servos
5) Loading motor control
6) Error detection
   - Battery end/pre-end
   - Tape end
   - No cassette
   - Erasure prevention
   - DEW (condensation)
   - PAUSE release
   - CLOG (jamming)
   - L. motor emergency
   - Drum rotation
   - Drum phase
   - Reel rotation
   - Capstan rotation
   - Drum/capstan start
6) H.M.S. counter
7) JOG VD insertion
8) Execution of various modes

**2. Abbreviated specifications**

- 8-bit high-speed, highly integrated single chip microcomputer
- A/D converter, 8-bit, 8-channel
- Serial interface
- Time/counter
- Time base timer
- Vector interrupts
- High precision timing pattern generation function (high-speed output)
- PWM/DA gate pulse output, 12-bit, 2-channel
- High precision measurement function (FRC) for servo signals
- Power on reset function
- Sleep and stop functions
- External memory expansion mode, microcomputer mode
- ROM: 16 kbytes
- RAM: 352 kbytes
- Speed: 500 ns
- Process: C MOS
- Operating voltage: 4.5 to 5.5V
- Package: 80-pin flat package

### 3-9-2. DDS Microcomputer μPD7508BGB (IC651 on DK-2 Board)

**1. Function description**

1) Internal data communication control
2) Date/time measurement
3) LCD indication
4) Reading of key matrix
   (White balance, electronic shutter, edit search +/–, auto-lock, focus mode, counter reset, zero memory, title, store, color/mode, back light compensation, date/forward, time/set)

**2. Operation modes**

As shown in the table below, the operation mode is determined according to the position of the power switch (camera/off/video) and whether or not there is a main battery.

| Mode | Main Battery | Power Switch | Microcomputer Power | Clock Mode | Main Functions |
|---|---|---|---|---|---|
| BACK UP | No | Camera/off/ video | Lithium battery | 500 ms intermittent oscillation | • Backup of title and tape counter data<br>• Clock count operation |
| | Yes | Off | | | |
| VTR ON | Yes | Video | SS 5V (main battery) | Continuous oscillation | • Serial communication with EVR and mode/mechanism control micro-computer<br>• Indication to EVF<br>• Acceptance of zero memory and counter reset keys |
| CAM ON | Yes | Camera | SS 5V (main battery) | Continuous oscillation | • VTR ON functions + all camera features<br>• Indication control for white balance, focus, titles, electronic shutter, etc. |

### 3-9-3. EVR Microcomputer MC68HC05N4FU (IC601 on CV-8 Board)

**1. Function description**

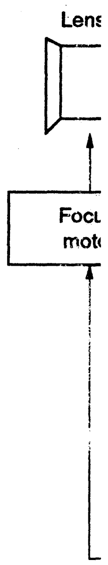
1) EVR control
2) Auto white balance control
3) Electronic shutter

3-9-4. AF

1. Functi
1) AF con
2) Power
3) Zoom

2. Auto f
(A-AF:
The high f
luminance s
using extern

3. Outlin
The frequen
2 MHz are
digitally int
the evaluat
information
finding the
that:
Picture is i
frequency
increases



### 3-9-4. AF Microcomputer MC68HC05C4FU (IC802 on CV-8 Board)

**1. Function description**

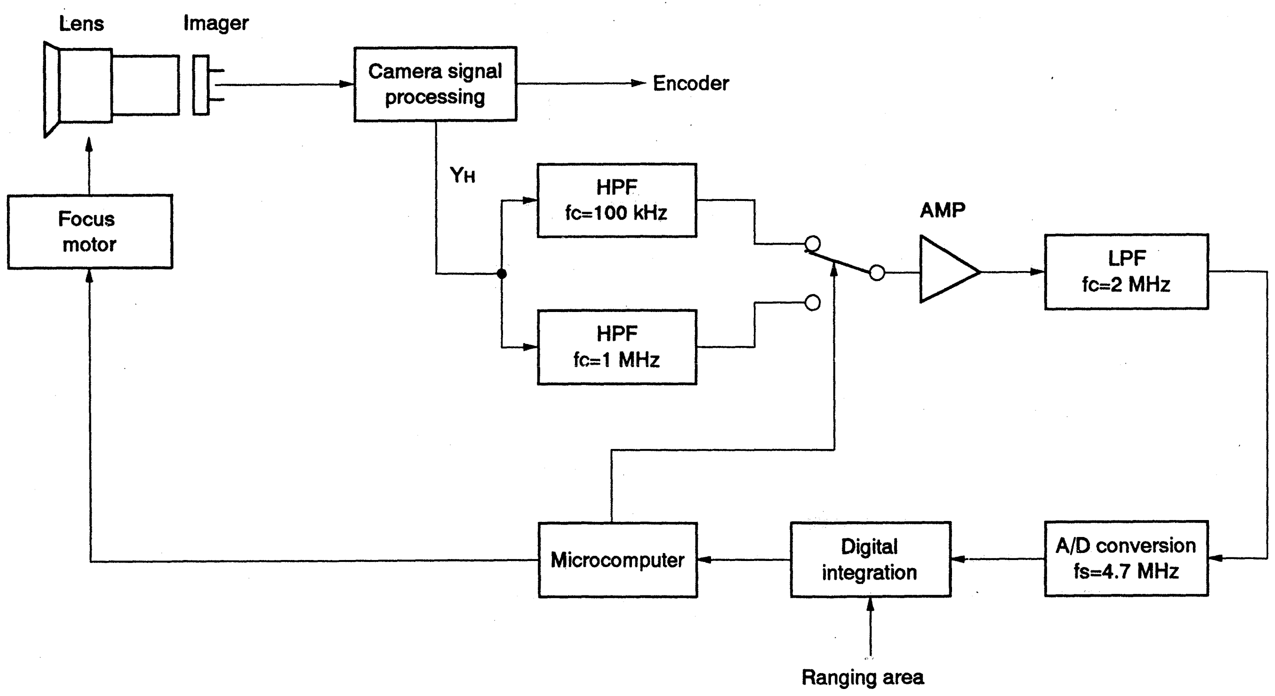
1) AF control
2) Power focus
3) Zoom motor drive

**2. Auto focus system of this unit**
**(A-AF: Image processing system)**

The high frequency components of the video signal (actually luminance signal)are microcomputer processed by TCL without using external sensors to control the focus.

**3. Outline of operation**

The frequency components from 100k to 2 MHz and from 1M to 2 MHz are extracted from the luminance signal Y, and these are digitally integrated for each field. This integration value is called the evaluation value. This evaluation value becomes the information for auto focusing, and the focus ring is controlled by finding the peaks in the evaluation values based on the concepts that:
Picture is in focus → edges of image become clearer → high frequency components of image increase → evaluation value increases



### 3-9-5. Mode/Mechanism Control — Video, Audio Block Interface

| Signal | I/O | Pin No. | STOP | FF | REW | CUE | REVIEW | PB | PB • PAUSE | REC | REC • PAUSE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ME/$\overline{\text{MP}}$ | O | Pin ⑪ of CN501 on CO-2 board | *1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 |
| SP/$\overline{\text{LP}}$ | O | Pin ⑦ of IC501 on CO-2 board | H | H | H | *2 | *2 | *2 | *2 | H | H |
| JOG | O | Pin ⑧ of IC501 on CO-2 board | L | L | L | H | H | L | H | L | L |
| VA PB MODE | O | Pin ⑨ of IC501 on CO-2 board | L | L | L | H | H | H | H | L | L |
| VIDEO CS | O | Pin ⑬ of IC501 on CO-2 board | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 |
| AUDIO MUTE | O | Pin ⑭ of IC501 on CO-2 board | L | L | L | H | H | L | H | L | L |
| $\overline{\text{VP SAVE}}$ *16 | O | Pin ㉘ of IC501 on CO-2 board | H | H | L | L | L | L | L | L | H |
| SYNC DET *14 | O | Pin ㉙ of IC501 on CO-2 board | *4 | *4 | *4 | *5 | *5 | *5 | *5 | *4 | *4 |
| COSMO SO | O | Pin ㊳ of IC501 on CO-2 board | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 |
| $\overline{\text{COSMO SCK}}$ | O | Pin ㊴ of IC501 on CO-2 board | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 |
| CLOG | I | Pin (57) of IC501 on CO-2 board | H | *8 | *8 | *8 | *8 | *8 | *8 | H | H |
| COMP SYNC | I | Pin (58) of IC501 on CO-2 board | *9 | *9 | *9 | *9 | *9 | *9 | *9 | *9 | *9 |
| PB SP/$\overline{\text{LP}}$ | I | Pin (59) of IC501 on CO-2 board | L | *10 | *10 | *10 | *10 | L | L | L | L |
| CAM/$\overline{\text{LINE}}$ | O | Pin (63) of IC501 on CO-2 board | *11 | *11 | *11 | *11 | *11 | *11 | *11 | *11 | *11 |
| VIDEO MUTE *15 | O | Pin (64) of IC501 on CO-2 board | L | L | L | L | L | L | L | L | L |
| RP PB MODE | O | Pin (77) of IC501 on CO-2 board | L | L | L | H | H | H | H | L | L |
| $\overline{\text{FE ON}}$ | O | Pin (78) of IC501 on CO-2 board | H | H | H | H | H | H | H | L | H |
| JOG VD | O | Pin (79) of IC501 on CO-2 board | L | L | L | *12 | *12 | L | *12 | L | L |
| RF SWP | O | Pin (80) of IC501 on CO-2 board | H | *13 | *13 | *13 | *13 | *13 | *13 | *13 | *13 |

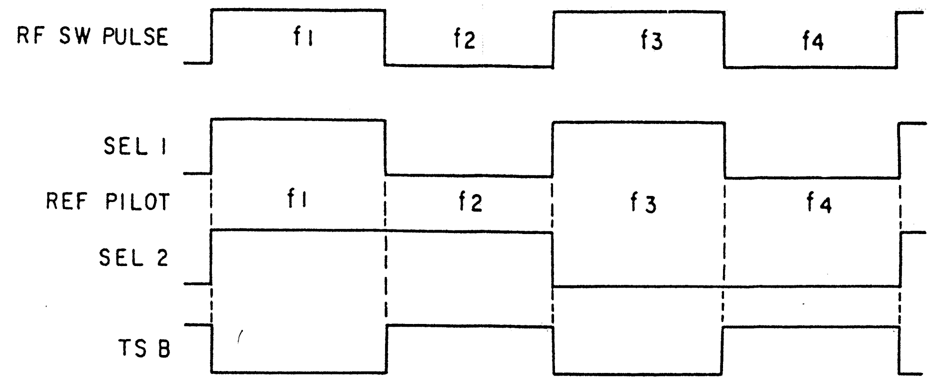
*1. "L" when using MP tape
*2. According to recorded mode of PB tape ( SP: "H", LP: "L" )
*3. Approx. 20 msec period "L" pulse. Chip select signal to video IC (IC201 and IC203 on CV-8 board)
*4. "H" when video signals are input.
*5. "H" when video signals are played back.
*6. 1V period "L" pulse train
*7. 1V period "L" pulse train
*8. Video head clog: "H", Normally: "L"
*9. Positive polarity composite sync signal
*10. SP mode recorded tape: "H", LP mode recorded tape: "L"
*11. "L" when the power switch is set to VIDEO position and "H" when CAMERA position.
*12. 1V period "H" pulse
*13. 2V period duty 50% pulse
*14. Detects a composite sync signal input at pin (58) of IC501.
*15. "H" when STOP to/from PB mode transition period.
*16. This signal switches a power (on/off) of video circuit IC202 and IC203.

### 3-9-6. Mode/Mechanism Control — Servo Peripheral Circuit Interface

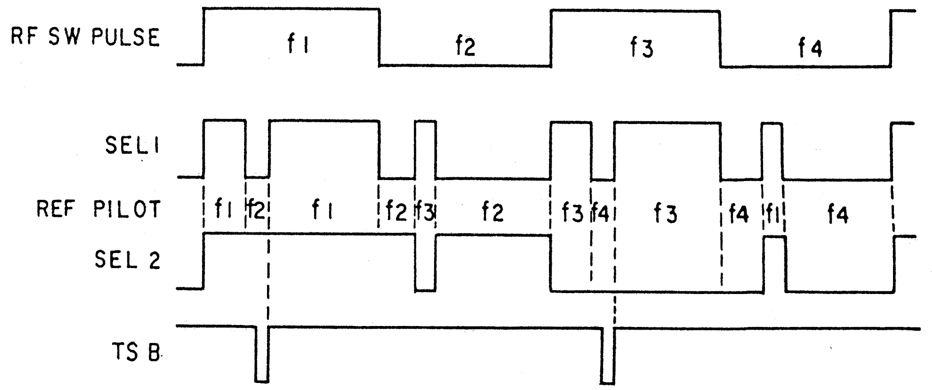
| Signal | I/O | Pin No. | EJECTED | THREAD-ING | UN THREAD-ING | STOP | FF | REW | CUE | REVIEW | PB | PB • PAUSE | REC | REC • PAUSE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEL 2 *17 | O | Pin ① of IC501 on CV-2 board | L | L | L | L | H | H | *3 | *3 | *2 | H | *1 | H |
| SEL 1 *17 | O | Pin ② of IC501 on CV-2 board | H | H | H | H | H | H | *3 | *3 | *2 | L | *1 | H |
| TS B *18 | O | Pin ④ of IC501 on CV-2 board | L | L | L | L | L | L | *3 | *3 | *2 | *16 | *1 | L |
| DRUM ON | O | Pin ⑩ of IC501 on CV-2 board | L | H | H | L | H | H | H | H | H | H | H | H |
| SW POSI | I | Pin ㊿ of IC501 on CV-2 board | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 |
| ATF ERROR | I | Pin (51) of IC501 on CV-2 board | *6 | *6 | *6 | *6 | *7 | *7 | *7 | *7 | *7 | *7 | *6 | *6 |
| DRUM PG | I | Pins (55) and (60) of IC501 on CV-2 board | L | *8 | *8 | L | *8 | *8 | *8 | *8 | *8 | *8 | *8 | *8 |
| DRUM FG | I | Pin (61) of IC501 on CV-2 board | H | *9 | *9 | H | *9 | *9 | *9 | *9 | *9 | *9 | *9 | *9 |
| CAP FG | I | Pins (62) and (69) of IC501 on CV-2 board | H/L | PULSE | PULSE | H/L | *10 | *10 | *10 | *10 | *10 | H/L | *10 | H/L |
| CAP D/A | I | Pin (65) of IC501 on CV-2 board | L | *11 | *11 | L | *11 | *11 | *11 | *11 | *11 | L | *11 | L |
| DRUM D/A | O | Pin (66) of IC501 on CV-2 board | L | *12 | *12 | L | *12 | *12 | *12 | *12 | *12 | *12 | *12 | *12 |
| CAP PWM | O | Pin (67) of IC501 on CV-2 board | L | *13 | *13 | L | *13 | *13 | *13 | *13 | *13 | L | *13 | L |
| DRUM FWD/REV | O | Pin (68) of IC501 on CV-2 board | *14 | *14 | *14 | *14 | *14 | *14 | *14 | *14 | *14 | *14 | *14 | *14 |
| CAP ON | O | Pin (75) of IC501 on CV-2 board | L | H | H | L | H | H | H | H | H | L | H | L |
| CAP FWD | O | Pin (76) of IC501 on CV-2 board | L | L | H | L | H | L | H | L | H | L | H | L |
| RF SWP | O | Pin (80) of IC501 on CV-2 board | H | *15 | *15 | H | *15 | *15 | *15 | *15 | *15 | *15 | *15 | *15 |

*1. See timing chart 1.
*2. See timing chart 2.
*3. See timing chart 3.
*4. 1V period "H" pulse
*5. DC voltage set with RV501 (Switching position adjustment)
*6. Approx. 2.3 Vdc constant
*7. ATF error voltage
*8. 2V period "H" pulse
*9. 1.4 msec period pulse
*10. Pulses of frequecy in proportion to tape speed
*11. "H" pulse output when rising or falling edges of the capstan, Normaly: "HIZ"
*12. 6 msec period PWM signal (tri-state) of "H", "L" and "HIZ" (2.5 Vdc)
*13. 64 µsec period PWM signal
*14. Normally: "H"
*15. 2V period duty 50% pulse
*16. V period "L" pulse
*17. ATF REF PILOT signal frequency (f1 to f4) selecting signal
*18. ATF AGC timing control signal

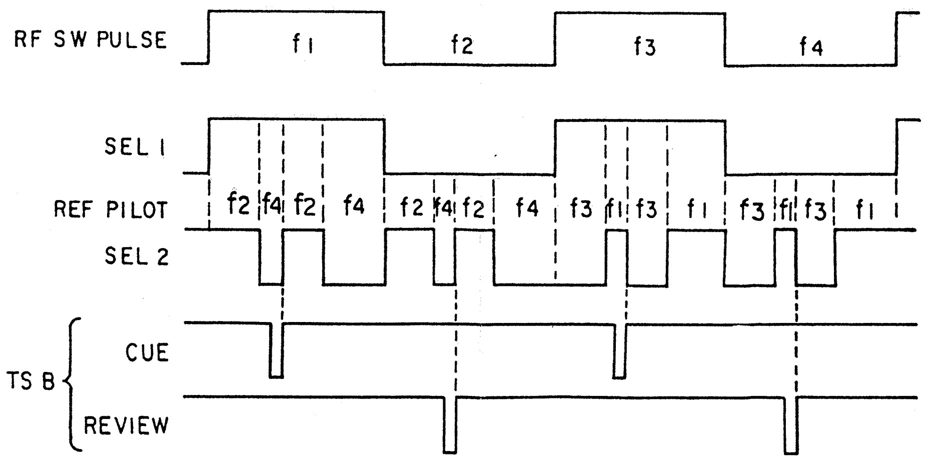
Timing chart 1 (REC)


RF SW PULSE
f1
f2
f3
f4
SEL 1
REF PILOT
f1
f2
f3
f4
SEL 2
TS B

Timinfg chart 2 (PB)


RF SW PULSE
f1
f2
f3
f4
SEL 1
REF PILOT
f1
f2
f1
f2
f3
f2
f3
f4
f3
f4
f1
f4
SEL 2
TS B

Timing chart 3 (CUE/REVIEW)


RF SW PULSE
f1
f2
f3
f4
SEL 1
REF PILOT
f2
f4
f2
f4
f2
f4
f2
f4
f3
f1
f3
f1
f3
f1
f3
f1
SEL 2
TS B
CUE
REVIEW

### 3-9-7. Mode/Mechanism Control — Mode/Mechanism Control Peripheral Circuit Interface

| Signal | I/O | Pin No. | I/O Level |
|---|---|---|---|
| VTR DD ON | O | Pin ③ of IC502 on CO-2 board | VTR DC/DC converter on/off signal<br>"H" when power of video or camera is turned on. |
| CAM DD ON | O | Pin ⑤ of IC502 on CO-2 board | Camera DC/DC converter on/off signal<br>"H" when power of camera is turned on. |
| DATA SCREEN | O | Pin ⑥ of IC502 on CO-2 board | "H" when data screen is turned on. |
| SP/$\overline{\text{LP}}$ | O | Pin ⑦ of IC502 on CO-2 board | "H" during SP recording mode or playback of tape recorded in SP mode |
| $\overline{\text{SYS RESET}}$ | O | Pin ⑫ of IC502 on CO-2 board | Reset signal of AF microcomputer (IC802 on the CV-8 board)<br>Normally: "H" ("L" pulse when power of video or camera is turned on.) |
| $\overline{\text{M IN 3}}$ | I | Pin ⑮ of IC502 on CO-2 board | No key matrix input signal: "H" (Other: "L") |
| $\overline{\text{M IN 2}}$ | I | Pin ⑯ of IC502 on CO-2 board | No key matrix input signal: "H" (Other: "L") |
| $\overline{\text{M IN 1}}$ | I | Pin ⑰ of IC502 on CO-2 board | No key matrix input signal: "H" (Other: "L") |
| $\overline{\text{M IN 0}}$ | I | Pin ⑱ of IC502 on CO-2 board | No key matrix input signal: "H" (Other: "L") |
| T/E LED | O | Pin ⑲ of IC502 on CO-2 board | Tape top/end LED lighting control signal<br>STOP/PB/REC/PB·PAUSE/REC·PAUSE/REVIEW: 170 msec period "H" pulse, CUE: 22 msec period "H" pulse, FF/REW: 4 msec period "H" pulse, EJECT or CASSETTE IN detecting: 22 msec period "H" pulse |
| UNLD | O | Pin ⑳ of IC502 on CO-2 board | Normally: "L"<br>("H" in Unthreading, "H" pulse is output in Mechanical mode transition) |
| LD | O | Pin ㉑ of IC502 on CO-2 board | Normally: "L"<br>("H" in Threading, "H" pulse is output in Mechanical mode transition) |
| M OUT 4 | O | Pin ㉒ of IC502 on CO-2 board | Key matrix output signal<br>20 msec period "H" pulse |
| M OUT 3 | O | Pin ㉓ of IC502 on CO-2 board | Key matrix output signal<br>20 msec period "H" pulse |
| $\overline{\text{M OUT 2}}$ | O | Pin ㉔ of IC502 on CO-2 board | Key matrix output signal<br>20 msec period "L" pulse |
| $\overline{\text{M OUT 1}}$ | O | Pin ㉕ of IC502 on CO-2 board | Key matrix output signal<br>20 msec period "L" pulse |
| $\overline{\text{M OUT 0}}$ | O | Pin ㉖ of IC502 on CO-2 board | Key matrix output signal<br>20 msec period "L" pulse |
| $\overline{\text{TALLY}}$ | O | Pin ㉗ of IC502 on CO-2 board | TALLY LED control signal. Normally: "H" ("L" during REC mode when power switch is set to CAMERA position) |

| Signal | I/O | Pin No. | I/O Level |
|---|---|---|---|
| $\overline{\text{RESET}}$ | I | Pin ㉜ of IC501 on CO-2 board | Normally: "H" (Reset: "L") |
| $\overline{\text{COSMO CS}}$ | I | Pin ㊱ of IC501 on CO-2 board | 1V period "L" pulse (18 msec period in VTR mode) |
| COSMO SI | I | Pin ㊲ of IC501 on CO-2 board | 1V period "H" pulse train (18 msec period in VTR mode) |
| COSMO SO | O | Pin ㊳ of IC501 on CO-2 board | 1V period "L" pulse train (18 msec period in VTR mode) |
| $\overline{\text{COSMO SCK}}$ | I/O | Pin ㊴ of IC501 on CO-2 board | 1V period "L" pulse train (18 msec period in VTR mode) |
| $\overline{\text{CAM P SW}}$ | I | Pin ㊵ of IC501 on CO-2 board | "L" when power switch (S501 on the VK-1 board) is set to CAMERA position and standby switch (S951 on the RC-26 board) to STANDBY position. |
| $\overline{\text{M IN 5}}$ | I | Pin ㊷ of IC501 on CO-2 board | No key matrix input signal: "H" (Other: "L" ) |
| $\overline{\text{M IN 4}}$ | I | Pin ㊸ of IC501 on CO-2 board | No key matrix input signal: "H" (Other: "L") |
| $\overline{\text{START/STOP}}$ | O | Pin ㊹ of IC501 on CO-2 board | Normally: "H" ("L" when start/stop button (S952 on the RC-26 board or S451 on the MA-21 board) is pressed.) |
| $\overline{\text{EJECT}}$ | I | Pin ㊺ of IC501 on CO-2 board | Normally: "H" ("L" when EJECT switch (S508 on VK-1 board) is pressed.) |
| $\overline{\text{LINCS}}$ | I | Pin ㊻ of IC501 on CO-2 board | Normally: "H"<br>("L" pulse when power button of the remote controller is turned on.) |
| $\overline{\text{DEW}}$ | I | Pin ㊼ of IC501 on CO-2 board | Normally: "H" ("L" when dew) |
| BATT DOWN | I | Pin ㊽ of IC501 on CO-2 board | Main battery voltage (CAM UNREG) is divided by RV551 (battery down adjustment) and input. For detecting battery end/pre-end. |
| STILL ADJ | I | Pin ㊾ of IC501 on CO-2 board | DC voltage set by RV552 (STILL adjustment) on the CV-8 board is input. |
| CLOG | I | Pin (57) of IC501 on CO-2 board | Normal playback: "L"<br>("H" when PB RF signal is not reproduced due to head clog, etc.. |
| PB SP/$\overline{\text{LP}}$ | I | Pin (59) of IC501 on CO-2 board | Recording speed mode detection signal in FF, REW, CUE or REVIEW mode<br>("H" in SP mode, "L" in LP mode) |
| $\overline{\text{VTR P SW}}$ | I | Pin (70) of IC501 on CO-2 board | "Normally: "H"<br>("L" when power switch (S501 on the VK-1 board) is set to video position.) |

### 3-9-8. Mode/Mechanism Control — Mechanism Block Interface

| Signal | I/O | Pin No. | I/O Level |
|---|---|---|---|
| S REEL FG | I | Pin ③ of CN001 on CC-15 board | Pulse (Approx. 4 Vp-p) that is generated by S-reel rotation.<br>It is approx. 1 sec period in REC/PB (SP) mode. |
| MODE SW 2 | I | Pin ④ of CN001 on CC-15 board | Pins are connected to mode switch for mechanical position detection. |
| MODE SW 1 | I | Pin ⑤ of CN001 on CC-15 board | |
| MODE SW 0 | I | Pin ⑥ of CN001 on CC-15 board | |
| $\overline{\text{M OUT 0}}$ (COM) | O | Pin ⑦ of CN001 on CC-15 board | |
| CC DOWN | I | Pin ⑧ of CN001 on CC-15 board | It is connected to cassette compartment down detection (CC DOWN) switch.<br>When cassette compartment comes down, connection between Pins ⑧ and ⑦ are short-circuited.<br>When cassette compartment comes up, connection between Pins ⑧ and ⑦ is open. |
| $\overline{\text{MOUT 0}}$ (COM) | O | Pin ⑦ of CN001 on CC-15 board | |
| END SENS | I | Pin ⑨ of CN001 on CC-15 board | Normally: "L" ("H" pulse is output in tape end or cassette unloaded) |
| 13/10 | I | Pin ⑩ of CN001 on CC-15 board | Not used |
| MP HG | I | Pin ⑫ of CN001 on CC-15 board | "H" pulse (20 msec period) is output when normal MP tape is used. |
| TOP END LED | O | Pin ⑬ of CN002 on CC-15 board | "L" pulse (approx. 1 Vp-p)<br>(pulse period is changed from 12 to 170 msec according to operation mode.) |
| TOP SENS | I | Pin ⑭ of CN002 on CC-15 board | Normally: "L" ("H" pulse is output in tape top or cassette unloaded) |
| ME/$\overline{\text{MP}}$ | I | Pin ⑮ of CN002 on CC-15 board | "L" in MP tape ("H" pulse (20 msec period) in cassette unloaded) |
| REC PROOF | I | Pin ⑰ of CN002 on CC-15 board | "L" when recording possible cassette is loaded.<br>"H" pulse (20 msec period) is output, when recording inhibiting cassette is loaded. |
| T REEL FG | I | Pin ⑱ of CN002 on CC-15 board | Pulse (Approx. 4 Vp-p) that is generated by T-reel rotation, in REC/PB (SP) mode, it is approx. 1 sec period. |

| | EJECTED | THREADING UNTHREADING | STOP | REC/PB/FF/ REW/CUE/ REVIEW/PAUSE |
|---|---|---|---|---|
| MODE SW 2 (④−⑦) | ○ | ○ | × | ○ |
| MODE SW 1 (⑤−⑦) | × | ○ | ○ | × |
| MODE SW 0 (⑥−⑦) | × | × | ○ | ○ |

×……Open
○……Short

### 3-9-9. DDS Microcomputer (IC651 on CK-8 Board) — Peripheral Circuit Interface

| PIN No. | Signal Name | I/O | Function and I/O Level |
|---|---|---|---|
| 1 | CMI 0 | I | Key matrix input signal. Normally "H".<br>When key input, "L" pulse for 18 ms (VTR mode) or 1V period (camera mode). |
| 2 | CMI 1 | I | |
| 3 | CMI 2 | I | |
| 4 | CMI 3 | I | |
| 5 | $\overline{\text{CMO 0}}$ | O | Key matrix output signal.<br>"L" pulse for 18 ms (VTR mode) or 1V period (camera mode). |
| 6 | $\overline{\text{CMO 1}}$ | O | |
| 7 | $\overline{\text{CMO 2}}$ | O | |
| 8 | $\overline{\text{CMO 3}}$ | O | |
| 15 | RESET | I | Normally "L". |
| 16 | CL 1 | I | System clock oscillation pin.<br>• Video power ON or camera power ON<br>Continuous oscillation (oscillation frequency approx. 320 kHz)<br>• Power OFF or backed up by lithium battery<br>500 ms intermittent oscillation (oscillation frequency approx. 70 kHz) |
| 18 | CL 2 | O | |
| 19 | INT 1 | I | Interrupt input by camera VD.<br>VTR mode: "H"<br>Camera mode: 1V period "H" pulse |
| 21 | $\overline{\text{DDS SCK}}$ | I/O | Serial communication·serial clock I/O.<br>V period "L" pulse train. |
| 22 | DDS SO | O | Serial communication·data output.<br>V period "H" pulse train. |
| 24 | DDS SI | I | Serial communication·data input.<br>V period "L" pulse train. |
| 25 | CG BUSY | I | Busy signal input from character generator.<br>V period "H" pulse train. |
| 26 | VTR PWR | I | SS 5V power detection. "H" while power ON. |
| 27 | LI PE | I | Lithium battery pre-end detection. Normally "H". "L" when lithium battery voltage drops. |
| 28 | $\overline{\text{TEST}}$ | I | Test mode input. Normally "H". |
| 29 | CG STB | O | Strobe signal for character generator.<br>1V period "H" pulse train. |
| 30 | $\overline{\text{COSMO CS}}$ | O | Chip select signal to servo/system control microcomputer (IC501 on CO-2 board).<br>1V period "L" pulse. |
| 31 | $\overline{\text{EVR CS}}$ | O | Chip select signal to EVR microcomputer (IC601 on CV-8 board).<br>1V period "L" pulse. |
| 32 | CMO 4 | O | Key matrix output signal. "H" pulse for 18 ms (VTR mode) or 1V period (camera mode). |
| 34 | TITLE CS | O | Chip select signal to title controller (IC902 on LI-5 board).<br>VTR mode: "L"<br>Camera mode: 1V period "H" pulse. |
| 35 | SRAM CS | O | Chip select signal to static RAM (IC903 on LI-5 board).<br>VTR mode: "L"<br>Camera mode: Normally "L". "H" during title operation. |
| 36 | TG STB | O | Strobe signal to timing generator (CV-8 board, DT-73 board).<br>Camera mode: 1V period "H" pulse.<br>VTR mode: "L" |
| 38 | X1 | | Crystal oscillation circuit for clock. Oscillation frequency of 32.768 kHz. |
| 39 | X2 | | |

### 3-9-10. EVR Microcomputer (IC601 on CV-8 Board) — Peripheral Circuit Interface

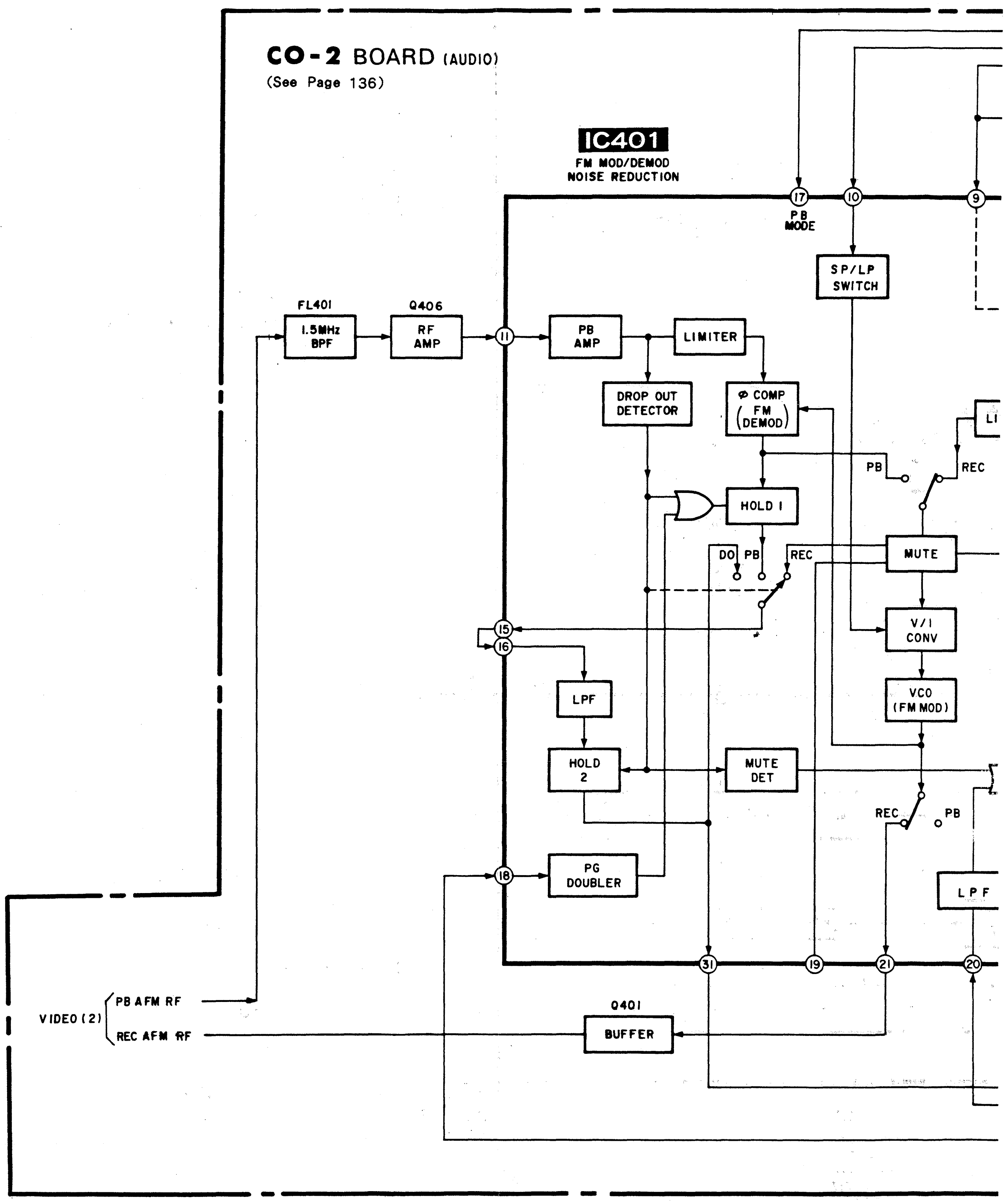
| PIN No. | Signal Name | I/O | Function and I/O Level |
|---|---|---|---|
| 1 | – | | – |
| 2 | DA SSW | O | "H" only during communication with serial switching D/A converter. V period "H" pulse. |
| 3 | $\overline{\text{EVR SCLK}}$ | O | Serial clock output. V period "L" pulse train. |
| 4 | EVR SI | I | Serial data input. V period "H" pulse train. |
| 5 | EVR SO | O | Serial data output. V period "L" pulse train. |
| 6 | $\overline{\text{EVR CS}}$ | I | Communication request from DDS. V period "L" pulse. |
| 7 | L IN | I | LINCS input. L: 0, H: 1. V period "H" pulse train. |
| 8 | L OUT | O | LINCS output. L: 0, H: 1. V period "H" pulse train. |
| 9 | $\overline{\text{CAM ADJ}}$ | I | Normal/Adjust selection. Normally "H". "L" during adjustment. |
| 10 | NC | – | NC |
| 11 | DDS SSW | O | DDS serial selection. V period "L" pulse. |
| 12, 13 | LD | O | Data load instruction to EVR (IC608, IC609). V period "H" pulse. |
| 14 | BL | – | "L" for back light compensation ON. |
| 15 | IN/OUT | I | Indoors/outdoors mode discrimination input. "H": indoors, "L": outdoors. |
| 16 | – | | |
| 17 | Vpp | | EEPROM write voltage supply: connected to GND. |
| 18 | | | GND |
| 19 | – | – | |
| 20 | PAL/$\overline{\text{NTSC}}$ | I | Broadcast system selection. L: NTSC, H: PAL. |
| 21 | GND | | – |
| 22 | GND | | – |
| 23 | GND | | – |
| 24, 25 | GND | | – |
| 26 | GND | – | – |
| 27 | GND | – | – |
| 28 | CAM 5V | I | Camera power on monitoring. L: CAM OFF, H: CAM ON. |
| 29 | AW IN | I | AWB A/D timer stop. Pattern drive interrupt. Normally 2V period pulse. |
| 30 | AW ADJ | O | AWB preset data fetch. Normally "L". "H" during auto white balance adjustment. |
| 31 | – | – | NC |
| 32 | DPCS | – | – |
| 33 | – | – | – |
| 34 | S3SW | O | AWB measurement signal selection. 3V period "H" pulse. |
| 35 | S2SW | O | AWB measurement signal selection. 3V period "H" pulse. |
| 36 | DISCHG | O | Capacitor reset pulse for timer measurement lamp voltage generation. V period "H" pulse. |
| 37 | – | – | – |
| 38 | S1SW | O | AWB measurement signal selection. 3V period "H" pulse. |
| 39 | – | – | – |
| 40 | OSC2 | O | Built-in inverter output for oscillation. Oscillation frequency: 4 MHz. |
| 41 | OSC1 | I | Built-in inverter input for oscillation. |
| 42 | VDD | | Connected to EVER 5V. |
| 43 | – | | – |
| 44 | $\overline{\text{RESET}}$ | | Normally "H". "L" when reset. |
| 45 | $\overline{\text{IRQ}}$ | | Connected to $\overline{\text{EVR CS}}$ signal. V period "L" pulse. |
| 46 | – | – | EVER 5V |
| 47 | – | – | EVER 5V |
| 48 | $\overline{\text{A/D EN}}$ | O | 1-bit A/D converter operation ON/OFF output for titler. Normally "H".<br>"L" for 7V period when title store button (S657 on CK-8 board) pressed. |

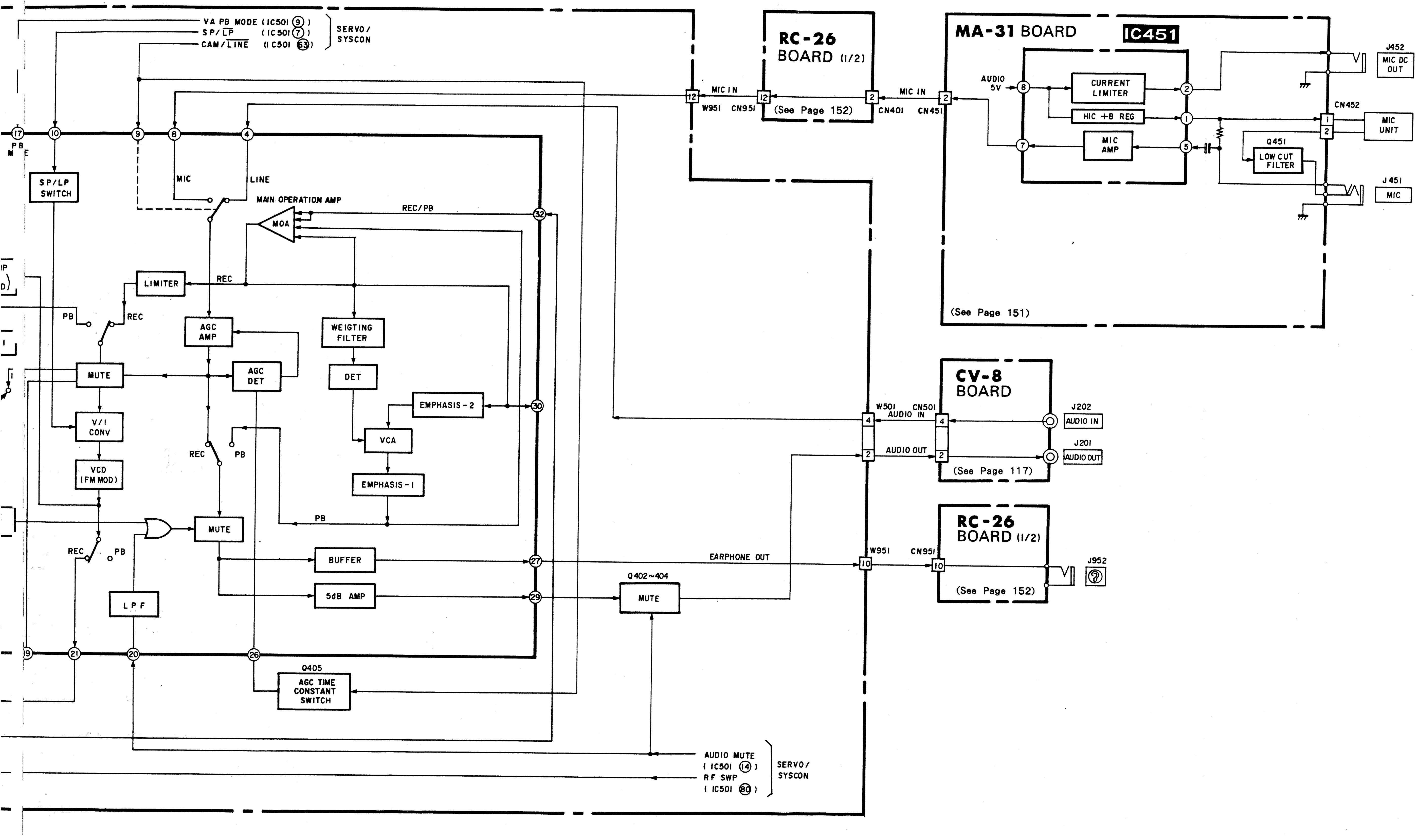
### 3-9-11. AF Microcomputer (IC802 on CV-8 Board) — Peripheral Circuit Interface

| PIN No. | Signal Name | I/O | Function and I/O Level |
|---|---|---|---|
| 1 | $\overline{\text{SS}}$ OUT | O | EVR data read timing output (PD5 SS input). V period "L" pulse train. |
| 2 | IRIS IN/$\overline{\text{OUT}}$ | O | Indoors/outdoors determination according to aperture value.<br>"H" for indoors and "L" for outdoors. |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | $\overline{\text{LOW CONTRAST}}$ | O | Signal to DDS microcomputer (IC651 on CK-8 board). "L" when subject has low contrast. |
| 7 | – | – | |
| 8 | | | Not used. |
| 9 | – | – | |
| 10 | – | – | |
| 11 | $\overline{\text{ZOOM T}}$ | O | Normally "H". "L" when zoom motor is rotated in telephoto direction by remote control. |
| 12 | $\overline{\text{ZOOM W}}$ | O | Normally "H". "L" when zoom motor is rotated in wide angle direction by remote control. |
| 13 | Focus N | O | Normally "L". "H" when focus motor is rotated in close range direction. |
| 14 | – | – | |
| 15 | Focus ∞ | O | Normally "L". "H" when focus motor is rotated in far range direction. |
| 16 | F SPD ϕ | O | Bit 0 (LSB) of focus motor speed control signal. |
| 17 | – | – | |
| 18 | F SPD1 | O | Bit 1 of focus motor speed control signal. |
| 19 | F SPD2 | O | Bit 2 of focus motor speed control signal. |
| 20 | – | – | |
| 21 | F SPD3 | O | Bit 3 (MSB) of focus motor speed control signal. |
| 22 | – | – | |
| 23 | Vss | – | Connected to GND. |
| 24 | Vss | – | Connected to GND. |
| 25 | – | – | |
| 26 | $\overline{\text{Focus N}}$ | I | "L" when focus ring is at close range edge. |
| 27 | – | – | |
| 28 | – | – | |
| 29 | – | – | |
| 30 | $\overline{\text{FOCUS }\infty}$ | O | "L" when focus ring is at far range edge. |
| 31 | AF SSW | O | Timing output for bus selection. V period "H" pulse. |
| 32 | – | – | |
| 33 | DA STB | O | For AF D/A converter data latch. V period "H" pulse train. |
| 34 | PAL/$\overline{\text{NTSC}}$ | I | NTSC/PAL selection. |
| 35 | – | – | |
| 36 | $\overline{\text{J STB}}$ | O | For external display jig data latch. V period "L" pulse. |
| 37 | XCS | O | Active "L" for communication request to IC801 CXD-1204. V period "L" pulse. |
| 38 | TEST | – | Connected to VDD. |
| 39 | – | – | |
| 40 | MODE | | Connected to VDD. |
| 41 | MISO | I/O | SPI Master: in, Slave: out. V period "H" pulse train. |
| 42 | MOSI | I/O | SPI Master: out, Slave: in. V period "L" pulse train. |
| 43 | $\overline{\text{SCK}}$ | I/O | SPI serial clock. V period "L" pulse train. |
| 44 | – | – | |
| 45 | $\overline{\text{SS}}$ | I | V period "L" pulse train. |
| 46 | – | – | |

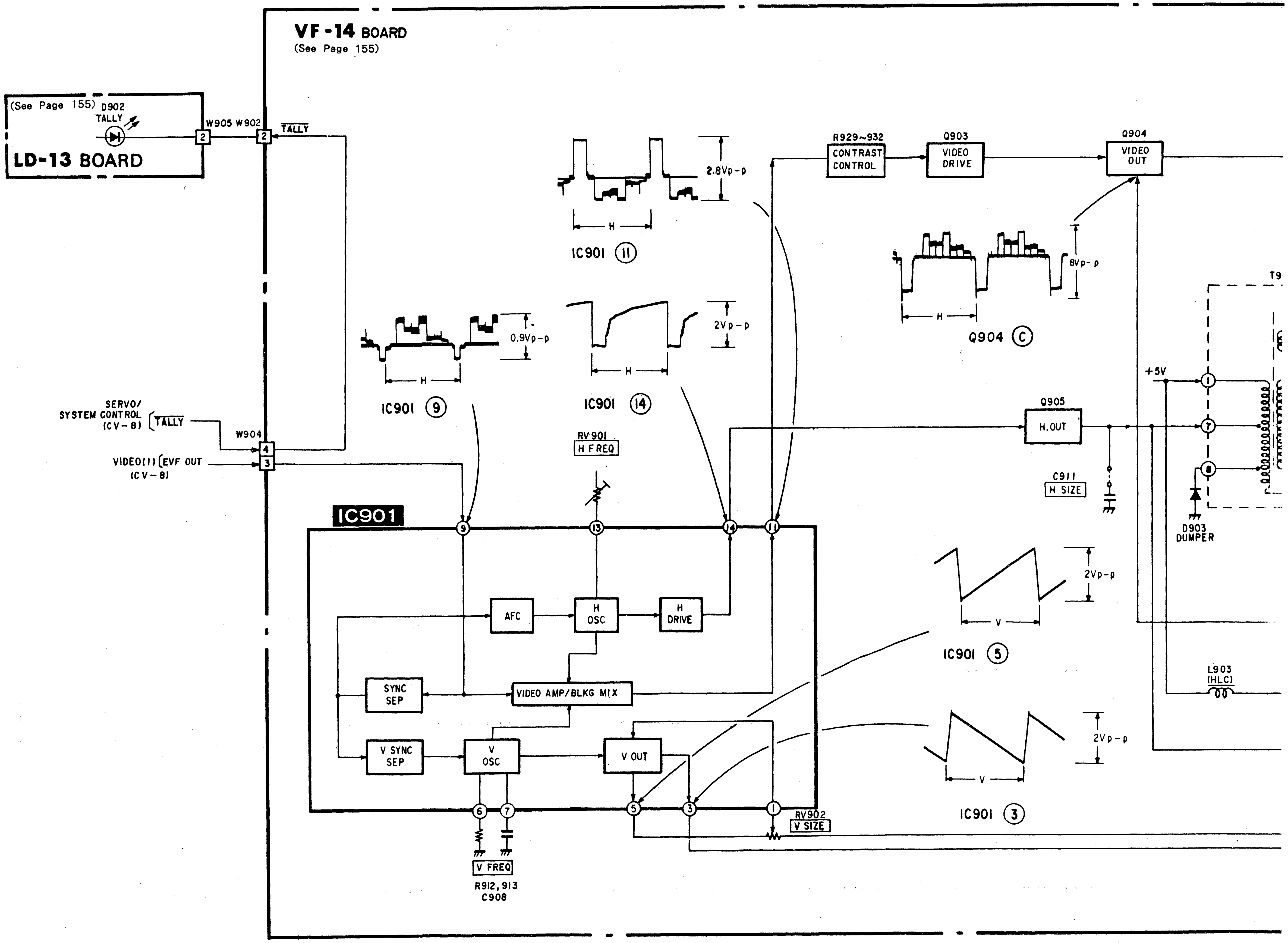
| PIN No. | Signal Name | I/O | Function and I/O Level |
|---|---|---|---|
| 48 | $\overline{\mathrm{EVR\ CS}}$ | I | "L" for EVR data communication request from DDS microcomputer. V period "L" pulse. |
| 49 | – | – | |
| 50 | – | – | |
| 51 | $\overline{\mathrm{Focus\ FG}}$ | I | Interrupt generation at falling edge of focus motor FG. "H" when auto focus OFF.<br>When auto focus ON, "L" pulse with period according to rotational speed of focus motor. |
| 52 | CLK OUT | O | Waveform shaped output of Pin (54) clock. (1.79 MHz) |
| 53 | – | – | |
| 54 | CLK IN | I | External clock input. 14.3 MHz clock input to Pin ㉘ of IC801 is divided to 1/8 and input. |
| 55 | VDD | | CAM 4.75V |
| 56 | – | – | |
| 57 | – | – | |
| 58 | – | – | |
| 59 | – | – | |
| 60 | $\overline{\mathrm{SYS\ RST}}$ | I | Normally "H". "L" when reset. |
| 61 | AREA | I | Interrupt generation at falling edge from CXD-1204 (IC801). V period pulse. |
| 62 | Vpp | | CAM 4.75V |
| 63 | WND W/$\overline{\mathrm{N}}$ | I | Auto focus range area selection. Connected to VDD by 100 kΩ (fixed at wide range side). |
| 64 | – | – | |

## 3-10. AUDIO BLOCK DIAGRAM

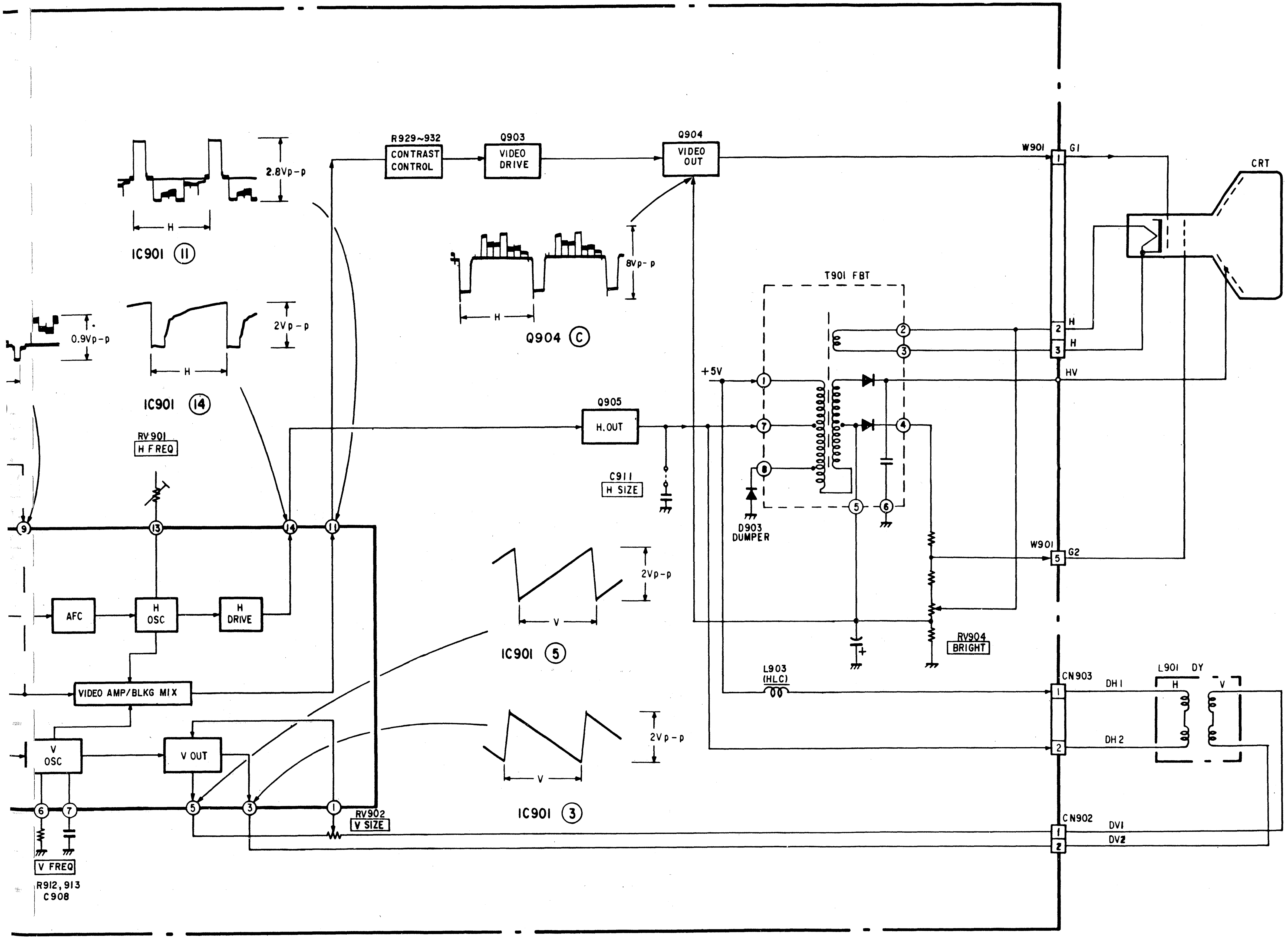

CO-2 BOARD (AUDIO)
(See Page 136)
IC401
FM MOD/DEMOD
NOISE REDUCTION
⑰
PB MODE
⑩
⑨
SP/LP SWITCH
FL401
1.5MHz BPF
Q406
RF AMP
⑪
PB AMP
LIMITER
DROP OUT DETECTOR
φ COMP (FM DEMOD)
LI
PB
REC
HOLD 1
DO
PB
REC
MUTE
⑮
⑯
V/I CONV
LPF
VCO (FM MOD)
HOLD 2
MUTE DET
REC
PB
⑱
PG DOUBLER
LPF
㉛
⑲
㉑
⑳
VIDEO (2)
PB AFM RF
REC AFM RF
Q401
BUFFER


VA PB MODE (IC501 ⑨)
SP/$\overline{LP}$ (IC501 ⑦)
CAM/$\overline{LINE}$ (IC501 ㊸)
SERVO/
SYSCON
⑰
PB
⑩
⑨
⑧
④
SP/LP
SWITCH
MIC
LINE
MAIN OPERATION AMP
REC/PB
MOA
㉜
LIMITER
REC
PB
REC
AGC
AMP
WEIGTING
FILTER
MUTE
AGC
DET
DET
EMPHASIS-2
㉚
V/I
CONV
VCA
REC
PB
VCO
(FM MOD)
EMPHASIS-1
PB
MUTE
REC
PB
BUFFER
㉗
5dB AMP
㉙
Q402~404
MUTE
LPF
⑲
㉑
⑳
㉖
Q405
AGC TIME
CONSTANT
SWITCH
EARPHONE OUT
AUDIO MUTE
(IC501 ⑭)
RF SWP
(IC501 ⑳)
SERVO/
SYSCON
MIC IN
12
W951
CN951
RC-26
BOARD (1/2)
12
(See Page 152)
2
CN401
MIC IN
CN451
2
MA-31 BOARD
IC451
AUDIO
5V
⑧
CURRENT
LIMITER
②
HIC +B REG
①
MIC
AMP
⑦
⑤
Q451
LOW CUT
FILTER
(See Page 151)
J452
MIC DC
OUT
CN452
1
2
MIC
UNIT
J451
MIC
W501
CN501
AUDIO IN
4
4
CV-8
BOARD
J202
AUDIO IN
AUDIO OUT
2
2
J201
AUDIO OUT
(See Page 117)
W951
CN951
10
10
RC-26
BOARD (1/2)
J952
(See Page 152)

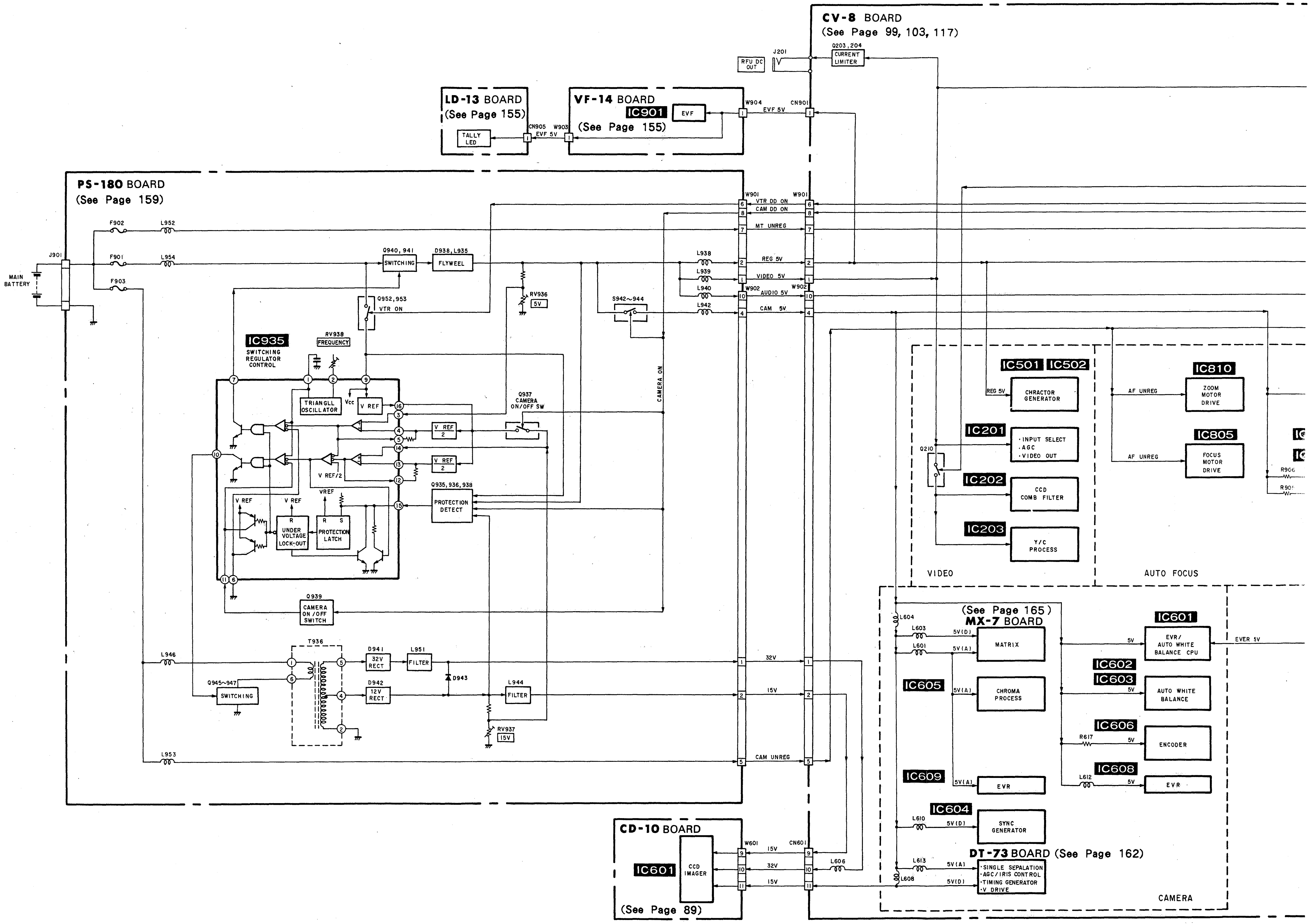
## 3-11. VIEW FINDER BLOCK DIAGRAM

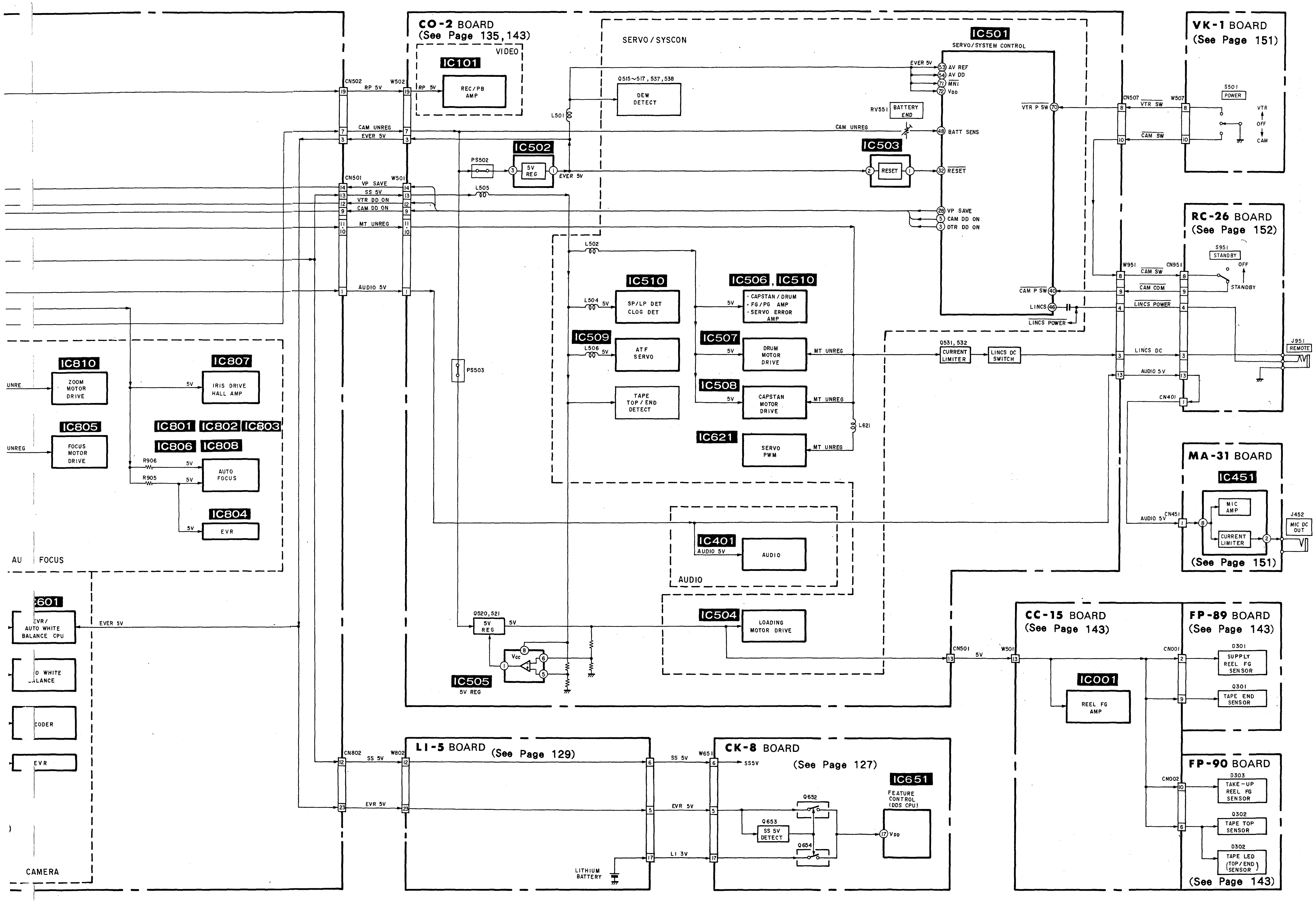


VF-14 BOARD
(See Page 155)
(See Page 155)
D902
TALLY
LD-13 BOARD
W905
W902
TALLY
SERVO/
SYSTEM CONTROL
(CV-8)
TALLY
W904
VIDEO(1)
EVF OUT
(CV-8)
IC901
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP/BLKG MIX
V SYNC SEP
V OSC
V OUT
RV901
H FREQ
RV902
V SIZE
V FREQ
R912, 913
C908
2.8Vp-p
H
IC901 ⑪
0.9Vp-p
H
IC901 ⑨
2Vp-p
H
IC901 ⑭
R929~932
CONTRAST CONTROL
Q903
VIDEO DRIVE
Q904
VIDEO OUT
8Vp-p
H
Q904 Ⓒ
T9
+5V
Q905
H.OUT
C911
H SIZE
D903
DUMPER
2Vp-p
V
IC901 ⑤
2Vp-p
V
IC901 ③
L903
(HLC)


R929~932
CONTRAST CONTROL
Q903
VIDEO DRIVE
Q904
VIDEO OUT
W901
G1
CRT
2.8Vp-p
H
IC901 ⑪
8Vp-p
H
Q904 Ⓒ
0.9Vp-p
2Vp-p
H
IC901 ⑭
T901 FBT
H
H
+5V
HV
Q905
H.OUT
RV901
H FREQ
C911
H SIZE
D903
DUMPER
W901
G2
AFC
H OSC
H DRIVE
2Vp-p
V
IC901 ⑤
RV904
BRIGHT
L903
(HLC)
CN903
DH1
DH2
L901 DY
H
V
VIDEO AMP/BLKG MIX
V OSC
V OUT
2Vp-p
V
IC901 ③
RV902
V SIZE
CN902
DV1
DV2
V FREQ
R912, 913
C908

## 3-12. POWER BLOCK DIAGRAM

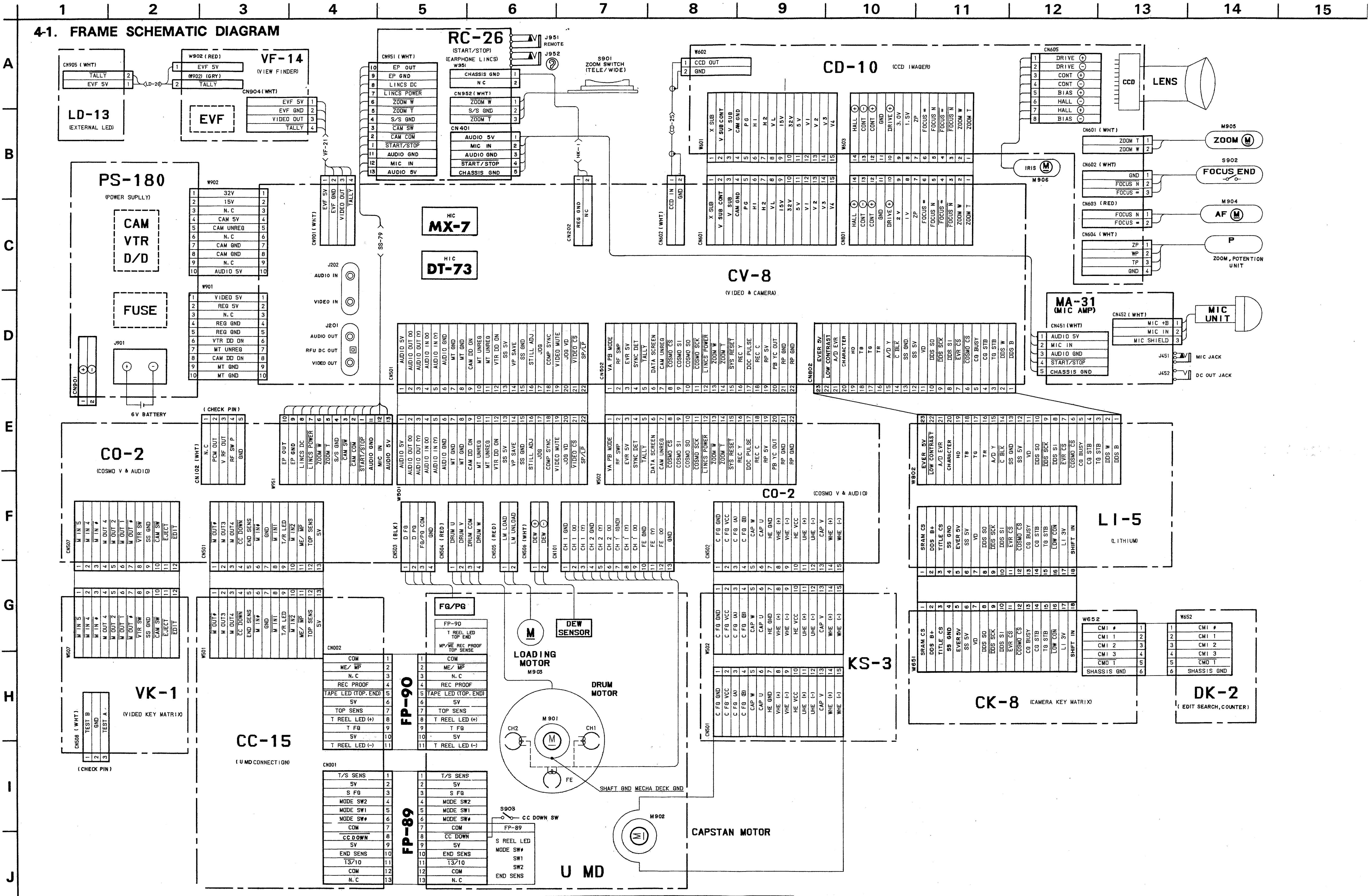

CV-8 BOARD
(See Page 99, 103, 117)
Q203, 204
CURRENT LIMITER
J201
RFU DC OUT
LD-13 BOARD
(See Page 155)
TALLY LED
CN905
W903
EVF 5V
VF-14 BOARD
IC901
EVF
(See Page 155)
W904
CN901
PS-180 BOARD
(See Page 159)
MAIN BATTERY
J901
F902
F901
F903
L952
L954
Q940, 941
SWITCHING
D938, L935
FLYWEEL
Q952, 953
VTR ON
RV936
5V
S942~944
W901
VTR DD ON
CAM DD ON
MT UNREG
L938
REG 5V
L939
VIDEO 5V
L940
W902
AUDIO 5V
L942
CAM 5V
CAMERA ON
IC935
SWITCHING REGULATOR CONTROL
RV938
FREQUENCY
TRIANGLL OSCILLATOR
Vcc
V REF
V REF 2
V REF/2
VREF
UNDER VOLTAGE LOCK-OUT
PROTECTION LATCH
R
S
Q937
CAMERA ON/OFF SW
Q935, 936, 938
PROTECTION DETECT
Q939
CAMERA ON/OFF SWITCH
T936
L946
Q945~947
SWITCHING
D941
32V RECT
L951
FILTER
D943
D942
12V RECT
L944
FILTER
RV937
15V
L953
32V
15V
CAM UNREG
CD-10 BOARD
IC601
CCD IMAGER
(See Page 89)
W601
CN601
L606
IC501
IC502
REG 5V
CHRACTOR GENERATOR
IC201
·INPUT SELECT
·AGC
·VIDEO OUT
Q210
IC202
CCD COMB FILTER
IC203
Y/C PROCESS
VIDEO
IC810
AF UNREG
ZOOM MOTOR DRIVE
IC805
FOCUS MOTOR DRIVE
AUTO FOCUS
R906
R907
(See Page 165)
MX-7 BOARD
L604
L603
5V(D)
L601
5V(A)
MATRIX
IC605
CHROMA PROCESS
IC609
EVR
IC604
L610
SYNC GENERATOR
DT-73 BOARD (See Page 162)
L613
L608
·SINGLE SEPALATION
·AGC/IRIS CONTROL
·TIMING GENERATOR
·V DRIVE
IC601
EVR/ AUTO WHITE BALANCE CPU
EVER 5V
IC602
IC603
AUTO WHITE BALANCE
IC606
R617
ENCODER
IC608
L612
EVR
CAMERA


CO-2 BOARD
(See Page 135, 143)
VIDEO
IC101
REC/PB AMP
SERVO/SYSCON
IC501
SERVO/SYSTEM CONTROL
EVER 5V
AV REF
AV DD
MNI
VDD
Q515~517, 537, 538
DEW DETECT
L501
RV551
BATTERY END
BATT SENS
VTR P SW
CAM UNREG
IC502
PS502
5V REG
EVER 5V
IC503
RESET
VP SAVE
CAM DD ON
DTR DD ON
L505
L502
IC510
L504
SP/LP DET
CLOG DET
IC506, IC510
CAPSTAN/DRUM
FG/PG AMP
SERVO ERROR AMP
IC509
L506
ATF SERVO
IC507
DRUM MOTOR DRIVE
MT UNREG
TAPE TOP/END DETECT
IC508
CAPSTAN MOTOR DRIVE
L621
IC621
SERVO PWM
CAM P SW
LINCS
LINCS POWER
Q531, 532
CURRENT LIMITER
LINCS DC SWITCH
PS503
IC401
AUDIO 5V
AUDIO
IC504
LOADING MOTOR DRIVE
Q520, 521
5V REG
IC505
5V REG
VCC
CN502
RP 5V
W502
CN501
VP SAVE
SS 5V
VTR DD ON
CAM DD ON
MT UNREG
AUDIO 5V
W501
VK-1 BOARD
(See Page 151)
CN507
W507
VTR SW
CAM SW
S501
POWER
VTR
OFF
CAM
RC-26 BOARD
(See Page 152)
S951
STANDBY
OFF
W951
CN951
CAM SW
CAM COM
LINCS POWER
LINCS DC
AUDIO 5V
CN401
J951
REMOTE
MA-31 BOARD
IC451
MIC AMP
CURRENT LIMITER
CN451
J452
MIC DC OUT
(See Page 151)
IC810
ZOOM MOTOR DRIVE
UNRE
IC807
IRIS DRIVE HALL AMP
IC805
FOCUS MOTOR DRIVE
UNREG
IC801 IC802 IC803
IC806 IC808
R906
R905
AUTO FOCUS
IC804
EVR
AU
FOCUS
601
EVR/ AUTO WHITE BALANCE CPU
EVER 5V
O WHITE ALANCE
CODER
EVR
CAMERA
LI-5 BOARD (See Page 129)
CN802
SS 5V
W802
EVR 5V
LITHIUM BATTERY
CK-8 BOARD
(See Page 127)
W651
SS5V
LI 3V
IC651
FEATURE CONTROL (DDS CPU)
Q652
Q653
SS 5V DETECT
Q654
CC-15 BOARD
(See Page 143)
CN501
W501
IC001
REEL FG AMP
FP-89 BOARD
(See Page 143)
CN001
D301
SUPPLY REEL FG SENSOR
Q301
TAPE END SENSOR
FP-90 BOARD
CN002
D303
TAKE-UP REEL FG SENSOR
Q302
TAPE TOP SENSOR
D302
TAPE LED (TOP/END) SENSOR
(See Page 143)

## SECTION 4

## PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

### 4-1. FRAME SCHEMATIC DIAGRAM


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H I J
LD-13 (EXTERNAL LED)
VF-14 (VIEW FINDER)
EVF
RC-26 (START/STOP) (EARPHONE LINCS)
J951 REMOTE
J952
S901 ZOOM SWITCH (TELE/WIDE)
CD-10 (CCD IMAGER)
CCD
LENS
M905 ZOOM
S902 FOCUS END
M904 AF
P
ZOOM, POTENTION UNIT
IRIS M906
PS-180 (POWER SUPPLY)
CAM VTR D/D
FUSE
6V BATTERY
MX-7
DT-73
J202 AUDIO IN VIDEO IN
J201 AUDIO OUT RFU DC OUT VIDEO OUT
CV-8 (VIDEO & CAMERA)
MA-31 (MIC AMP)
MIC UNIT
J451 MIC JACK
J452 DC OUT JACK
CO-2 (COSMO V & AUDIO)
LI-5 (LITHIUM)
VK-1 (VIDEO KEY MATRIX)
CC-15 (U MD CONNECTION)
FP-90
FP-89
FG/PG
DEW SENSOR
LOADING MOTOR M903
DRUM MOTOR M901
CH1 CH2 FE
SHAFT GND MECHA DECK GND
S903 CC DOWN SW
CAPSTAN MOTOR M902
U MD
KS-3
CK-8 (CAMERA KEY MATRIX)
DK-2 (EDIT SEARCH, COUNTER)

**FRAME FRAME**

## 4-2. PRI

**CD-10 (CC**

— Ref. No.

| CD-10 BOARD | |
|---|---|
| CN601 | C-5 |
| CN602 | A-5 |
| CN603 | A-5 |
| CN604 | A-5 |
| CN605 | B-4 |
| D601 | C-9 |
| D602 | B-9 |
| D603 | A-8 |
| D604 | A-9 |
| Q601 | C-8 |
| Q602 | A-7 |
| Q603 | A-8 |
| Q604 | B-8 |
| Q605 | A-3 |
| Q606 | A-3 |
| Q607 | A-2 |
| Q608 | A-1 |
| Q609 | B-7 |
| Q610 | B-7 |
| IC601 | B-2 |
| W601 | D-2 |
| W602 | D-3 |
| W603 | D-4 |

**CAUTION**

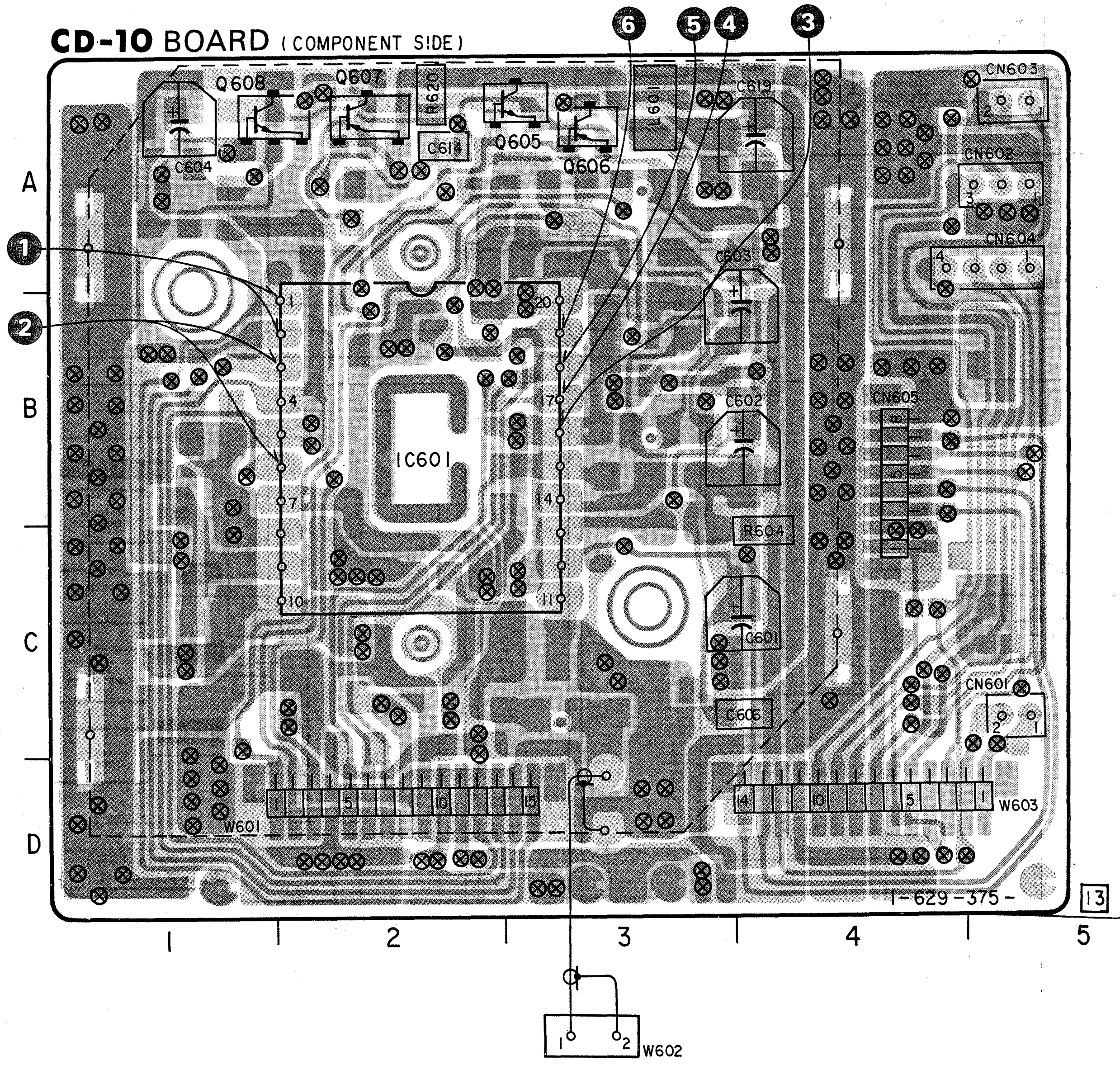
- When you
assembly
- CCD ima
static elec
Further, b
dust and

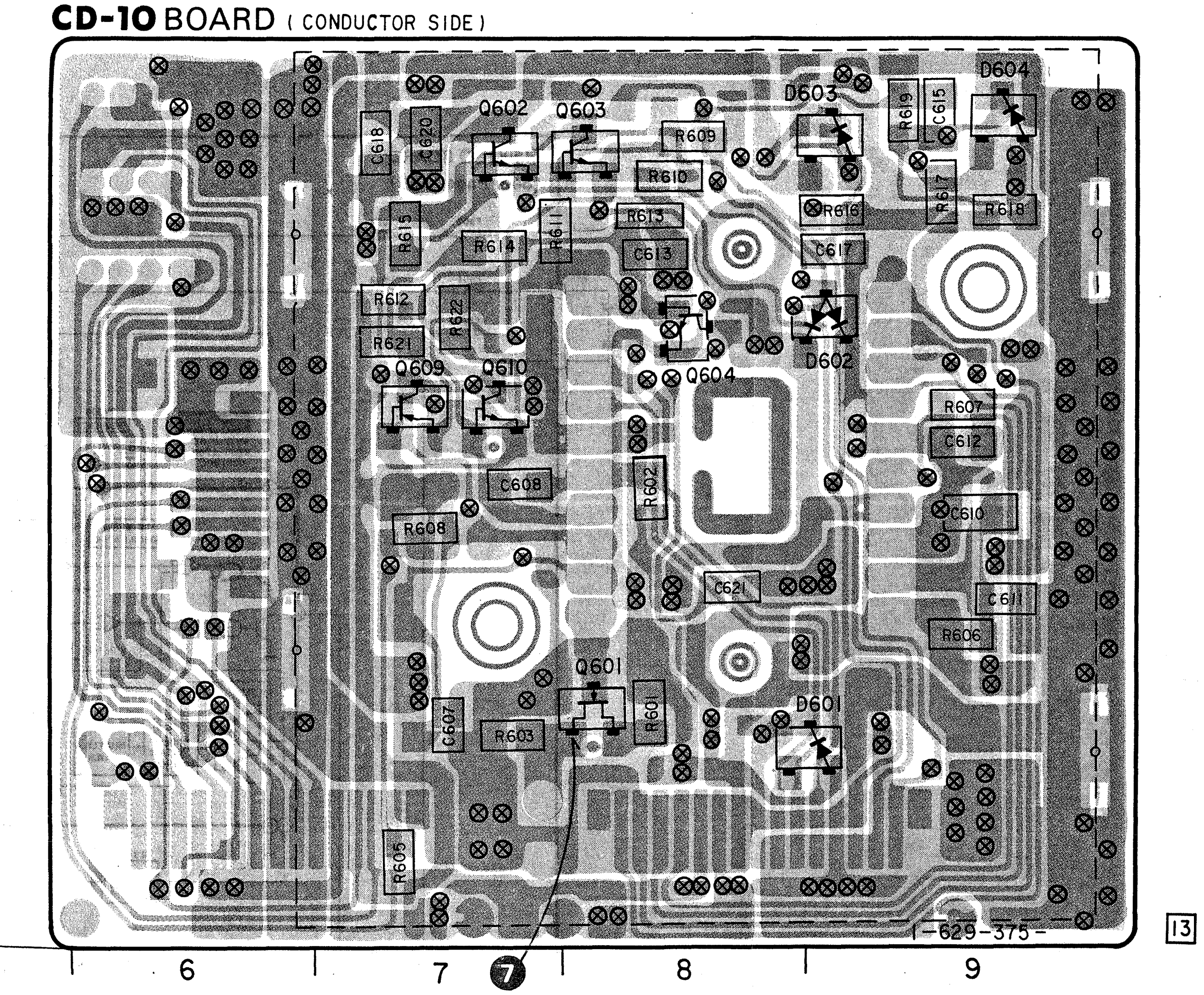
## 4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

### CD-10 (CCD IMAGER/ZOOM, FOCUS) PRINTED WIRING BOARDS

— Ref. No. CD-10 BOARD : 1000 series —

| CD-10 BOARD | |
|---|---|
| CN601 | C-5 |
| CN602 | A-5 |
| CN603 | A-5 |
| CN604 | A-5 |
| CN605 | B-4 |
| D601 | C-9 |
| D602 | B-9 |
| D603 | A-8 |
| D604 | A-9 |
| Q601 | C-8 |
| Q602 | A-7 |
| Q603 | A-8 |
| Q604 | B-8 |
| Q605 | A-3 |
| Q606 | A-3 |
| Q607 | A-2 |
| Q608 | A-1 |
| Q609 | B-7 |
| Q610 | B-7 |
| IC601 | B-2 |
| W601 | D-2 |
| W602 | D-3 |
| W603 | D-4 |


CD-10 BOARD (COMPONENT SIDE)
⑥
⑤
④
③
①
②
A
B
C
D
Q608
Q607
R620
C614
Q605
Q606
C619
C604
CN603
CN602
CN604
C603
IC601
C602
R604
C601
C605
CN605
CN601
W601
W603
W602
1-629-375-
13
1
2
3
4
5

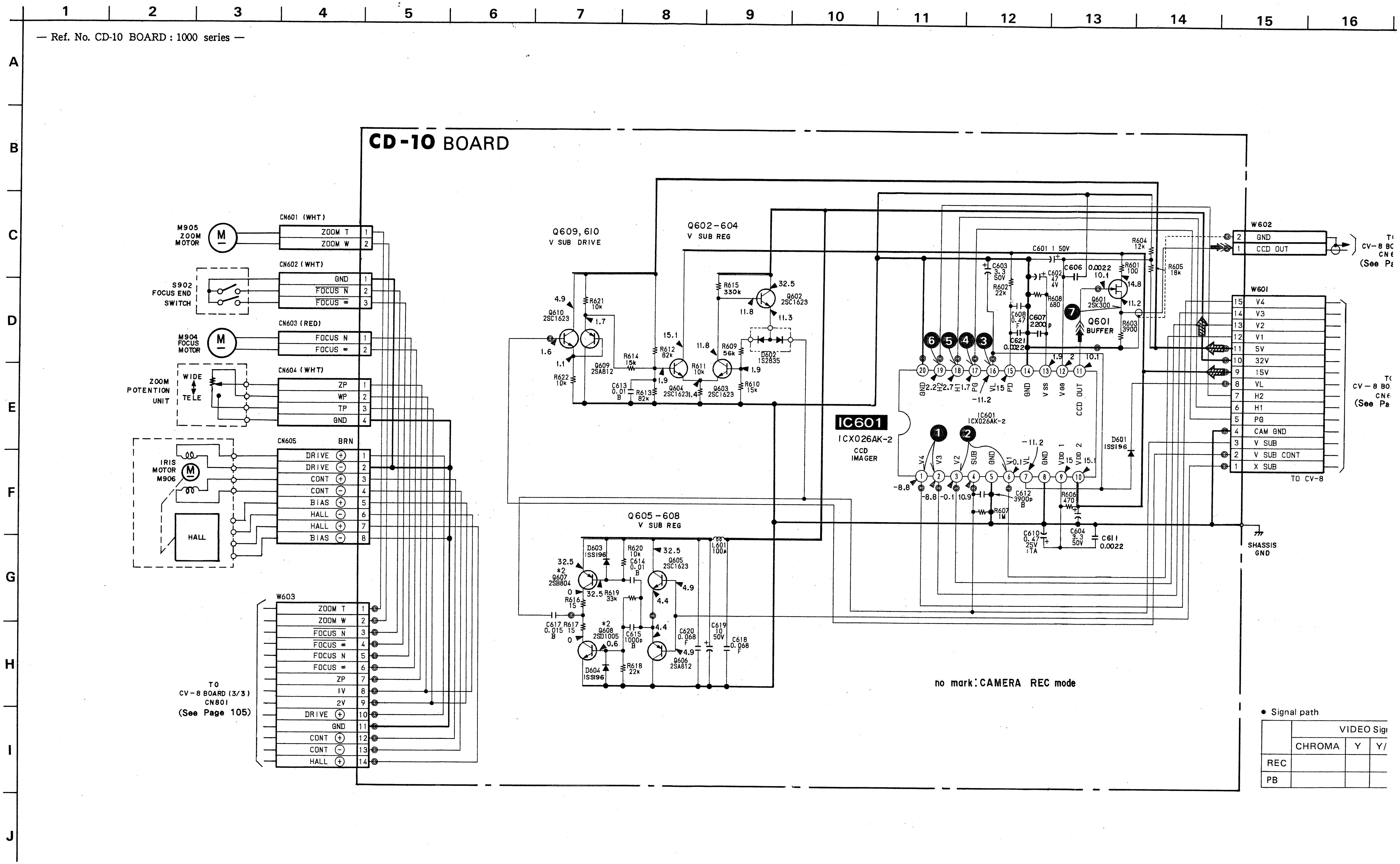

CD-10 BOARD (CONDUCTOR SIDE)
Q602
Q603
D603
D604
C618
C620
R609
R610
R619
C615
R617
R618
R616
R615
R614
R611
R613
C613
C617
R612
R622
R621
Q609
Q610
Q604
D602
R607
C612
C608
R602
R608
C610
C621
C611
R606
Q601
C607
R603
R601
D601
R605
1-629-375-
13
6
7
8
9
⑦

**CAUTIONS FOR REPLACEMENT OF CCD IMAGER**

- When you replaced the CCD imager adjust the whole camera assembly.
- CCD imager has such a structure that it may be destructed by static electricity, so handle it with a care similar for MOS IC. Further, be certain that the light receiving part has no stick of dust and no entry of bright light.

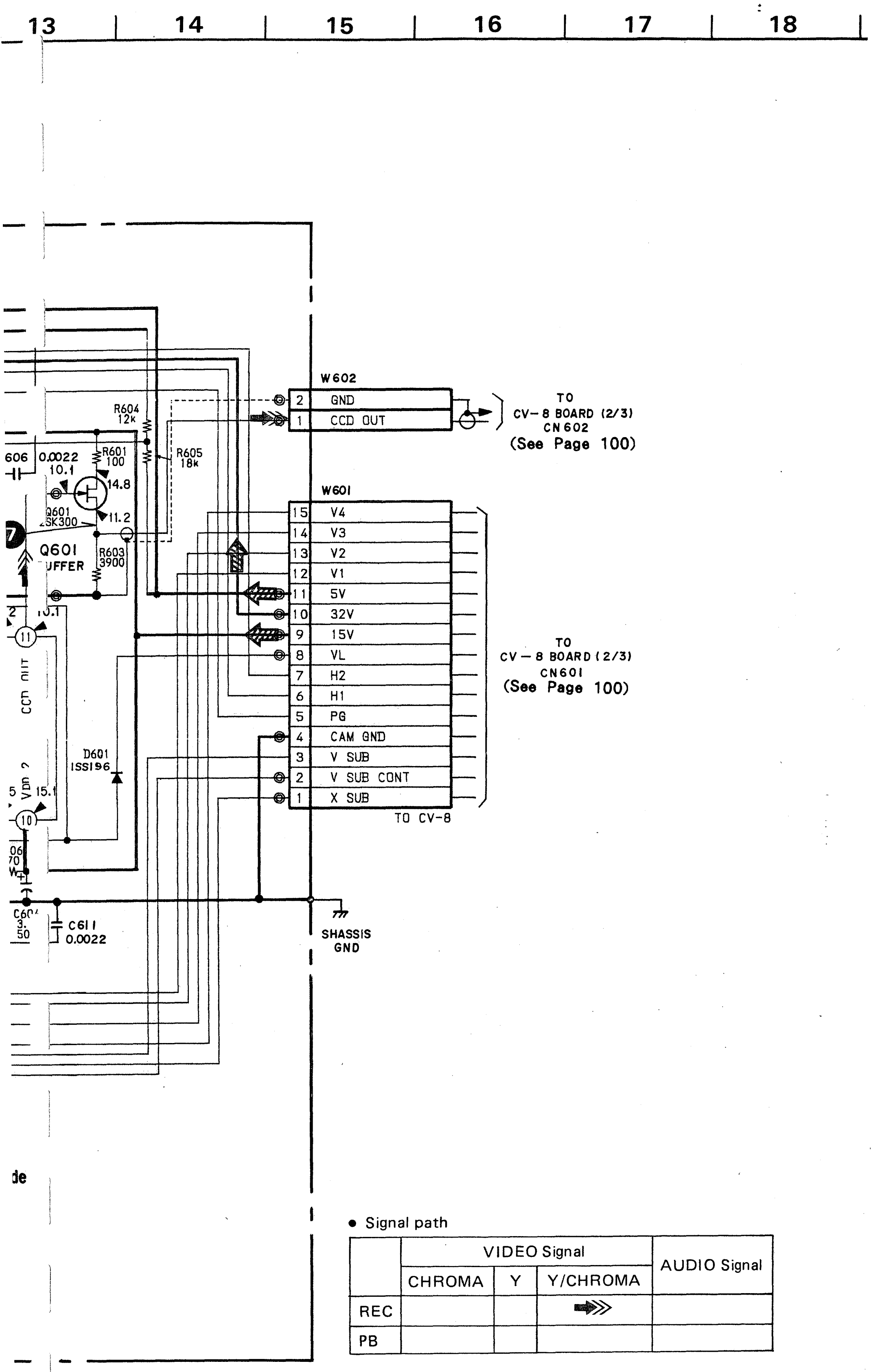
## CD-10 (CCD IMAGER/ZOOM, FOCUS) SCHEMATIC DIAGRAMS

— Ref. No. CD-10 BOARD : 1000 series —


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
CD-10 BOARD
M905 ZOOM MOTOR
S902 FOCUS END SWITCH
M904 FOCUS MOTOR
ZOOM POTENTION UNIT
WIDE
TELE
IRIS MOTOR M906
HALL
CN601 (WHT)
ZOOM T
ZOOM W
CN602 (WHT)
GND
FOCUS N
FOCUS ∞
CN603 (RED)
CN604 (WHT)
ZP
WP
TP
CN605 BRN
DRIVE ⊕
DRIVE ⊖
CONT ⊕
CONT ⊖
BIAS ⊕
HALL ⊖
HALL ⊕
BIAS ⊖
W603
IV
2V
TO CV-8 BOARD (3/3) CN801 (See Page 105)
Q609, 610 V SUB DRIVE
Q610 2SC1623
Q609 2SA812
Q602-604 V SUB REG
Q602 2SC1623
Q603 2SC1623
Q604 2SC1623
D602 1S2835
Q605-608 V SUB REG
Q607 2SB804
Q608 2SD1005
Q605 2SC1623
Q606 2SA812
D603 1SS196
D604 1SS196
L601 100μ
IC601
ICX026AK-2
CCD IMAGER
V4
V3
V2
SUB
GND
VL
VDD 1
VDD 2
H2
H1
PG
PD
VSS
VGG
CCD OUT
Q601 2SK300
Q601 BUFFER
D601 1SS196
W602
CCD OUT
TO CV-8 BO CN6 (See Pa
W601
5V
32V
15V
CAM GND
V SUB
V SUB CONT
X SUB
TO CV-8
CHASSIS GND
no mark: CAMERA REC mode

• Signal path

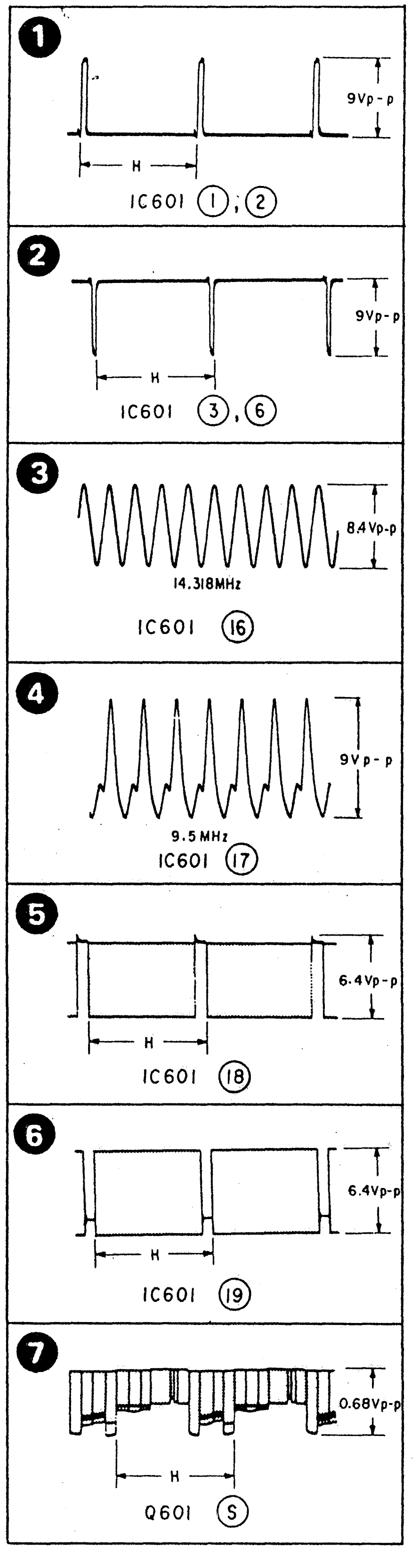
|  | VIDEO Sig |  |  |
|---|---|---|---|
|  | CHROMA | Y | Y/ |
| REC |  |  |  |
| PB |  |  |  |


13
14
15
16
17
18
W602
2 GND
1 CCD OUT
TO
CV-8 BOARD (2/3)
CN602
(See Page 100)
W601
15 V4
14 V3
13 V2
12 V1
11 5V
10 32V
9 15V
8 VL
7 H2
6 H1
5 PG
4 CAM GND
3 V SUB
2 V SUB CONT
1 X SUB
TO CV-8
TO
CV-8 BOARD (2/3)
CN601
(See Page 100)
R604
12k
R601
100
R605
18k
R603
3900
Q601
2SK300
Q601
BUFFER
0.0022
10.1
14.8
11.2
D601
1SS196
15.1
C611
0.0022
SHASSIS
GND

- Signal path

| | VIDEO Signal | | | AUDIO Signal |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | | | ⇛ | |
| PB | | | | |

## CD-10 BOARD



### THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

**(In addition to this , the necessary note is printed in each block.)**

- **For printed wiring boards.**
- ○— : indicated a lead wire mounted on the component side.
- ●— : indicated a lead wire mounted on the conductor side.
- ⊗ : Through hole.
- ▨ : Pattern from the side which enables seeing.
- ▨ : Pattern of the rear side.
- Circled numbers refer to waveforms.

| Caution: | |
|---|---|
| Pattern face side:<br>(Conductor Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side:<br>(Component side) | Parts on the parts face side seen from the parts face are indicated. |

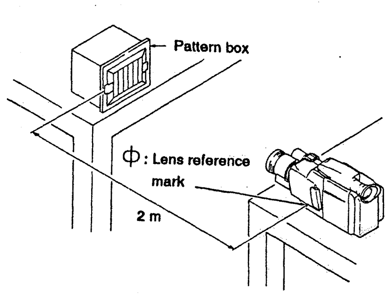
- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- ▭ : fusible resistor.
- ☐ : panel designation.
- ☐ : adjustment for repeair.
- ━━ : B+ Line.
- ⇛ : IN/OUT direction of (+, – ) B LINE.
- Circled numbers refer to waveforms.

| Note: | Note: |
|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty.<br>Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.<br>Ne les remplacer que par une piéce portant le numéro spécifié. |

When indicating parts by reference number, please include the board name.

- **Measuring conditions voltage value and waveform.**
  **(CAMERA, CAMERA FUNCTION block)**
- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points.
  Readings are taken with a digital multimeter (DC 10MΩ ).
- Voltage variations may be noted due to normal production tolerances.

1. Connection


Pattern box
Φ : Lens reference mark
2 m

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

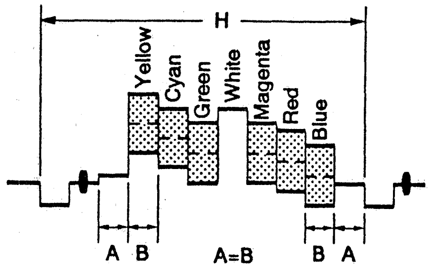

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A
B
A=B
B
A

Fig. a (Video output terminal output waveform

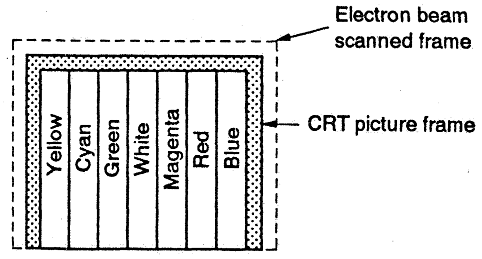
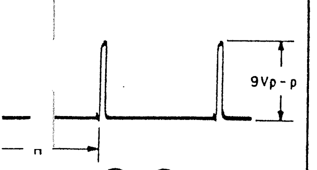

Electron beam scanned frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. (Picture on monitor TV)

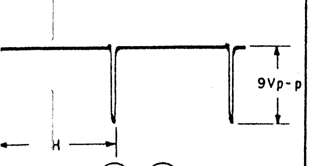
**(VIDEO, SERVO/SYSTEM CONTROL,**
**VIDEO FUNCTION, VIEW FINDER block)**

- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ ).
- Voltage variations may be noted due to normal production tolerances.

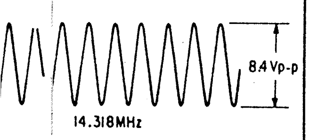
BOARD



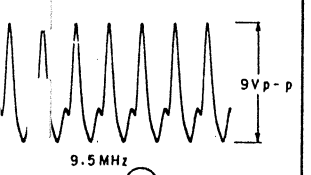
IC601 ①,②



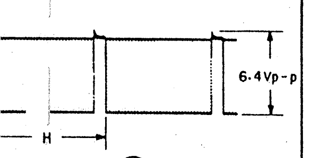
IC601 ③,⑥



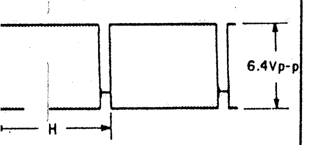
IC601 ⑯



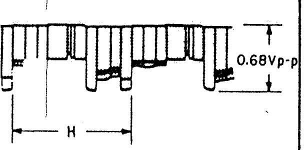
IC601 ⑰



IC601 ⑱



IC601 ⑲



Q601 Ⓢ

## THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

**(In addition to this, the necessary note is printed in each block.)**

- **For printed wiring boards.**
- ○— : indicated a lead wire mounted on the component side.
- ●— : indicated a lead wire mounted on the conductor side.
- ⊗ : Through hole.
- ▨ : Pattern from the side which enables seeing.
- ▨ : Pattern of the rear side.
- Circled numbers refer to waveforms.

| Caution: | |
|---|---|
| Pattern face side:<br>(Conductor Side) | Parts on the pattern face side seen from the pattern face are indicated. |
| Parts face side:<br>(Component side) | Parts on the parts face side seen from the parts face are indicated. |

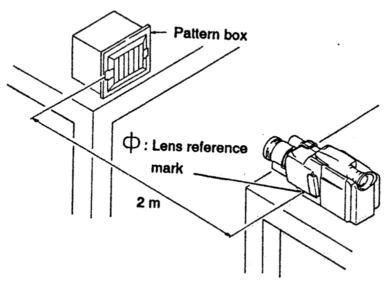
- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W unless otherwise noted.
  kΩ : 1000Ω, MΩ : 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- ▭ : panel designation.
- ▭ : adjustment for repeair.
- ━ : B+ Line.
- ⇨ : IN/OUT direction of (+, –) B LINE.
- Circled numbers refer to waveforms.

| Note: | Note: |
|---|---|
| The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty.<br>Replace only with part number specified. | Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.<br>Ne les remplacer que par une piéce portant le numéro spécifié. |

When indicating parts by reference number, please include the board name.

- **Measuring conditions voltage value and waveform. (CAMERA, CAMERA FUNCTION block)**
- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points. Readings are taken with a digital multimeter (DC 10MΩ).
- Voltage variations may be noted due to normal production tolerances.

1. Connection



2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

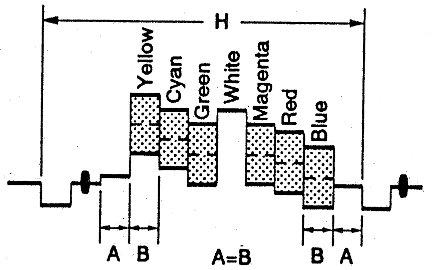


Fig. a (Video output terminal output waveform

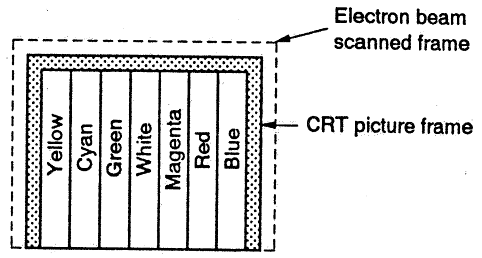


Fig. (Picture on monitor TV)

**(VIDEO, SERVO/SYSTEM CONTROL, VIDEO FUNCTION, VIEW FINDER block)**

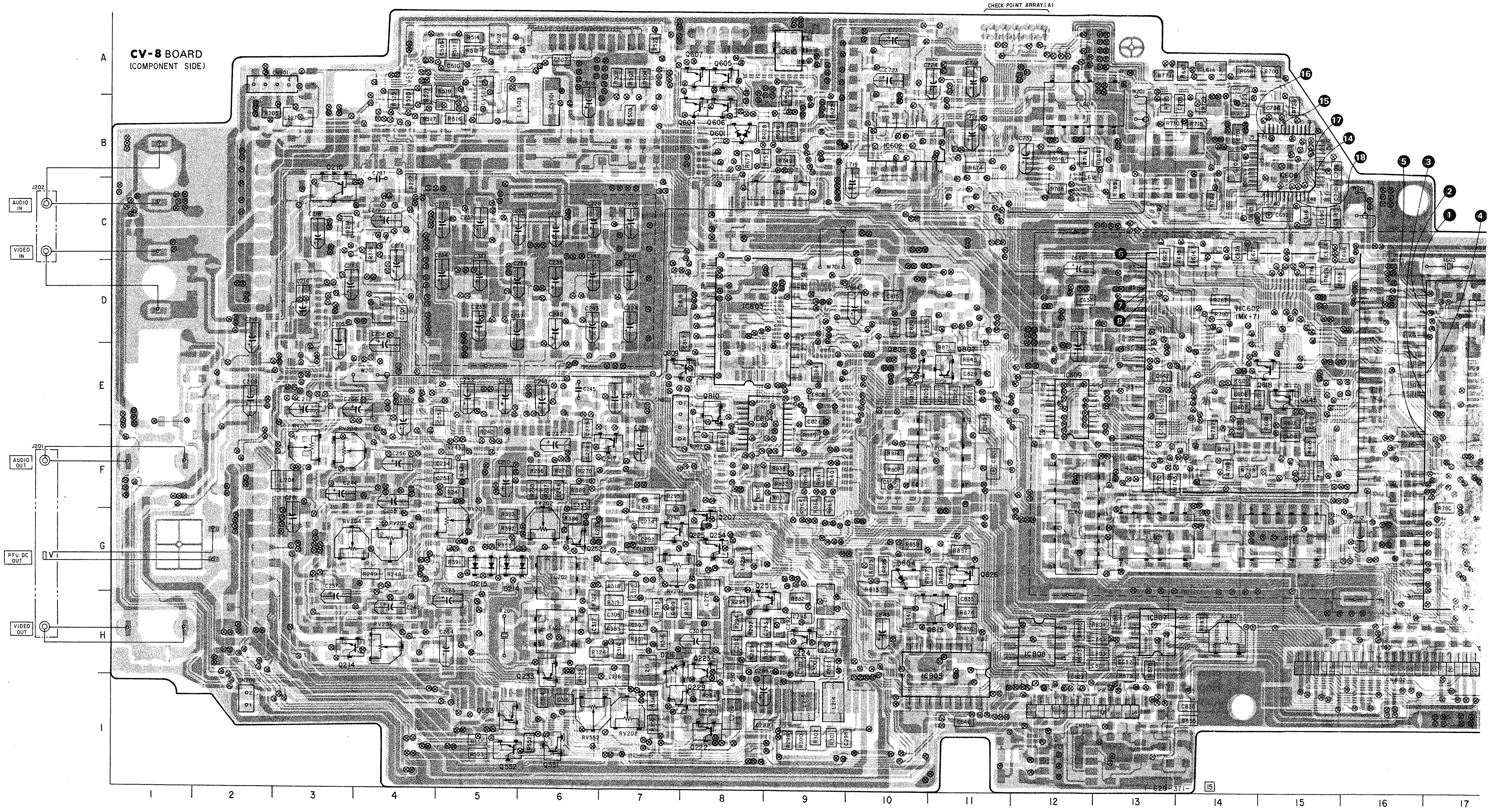
- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.

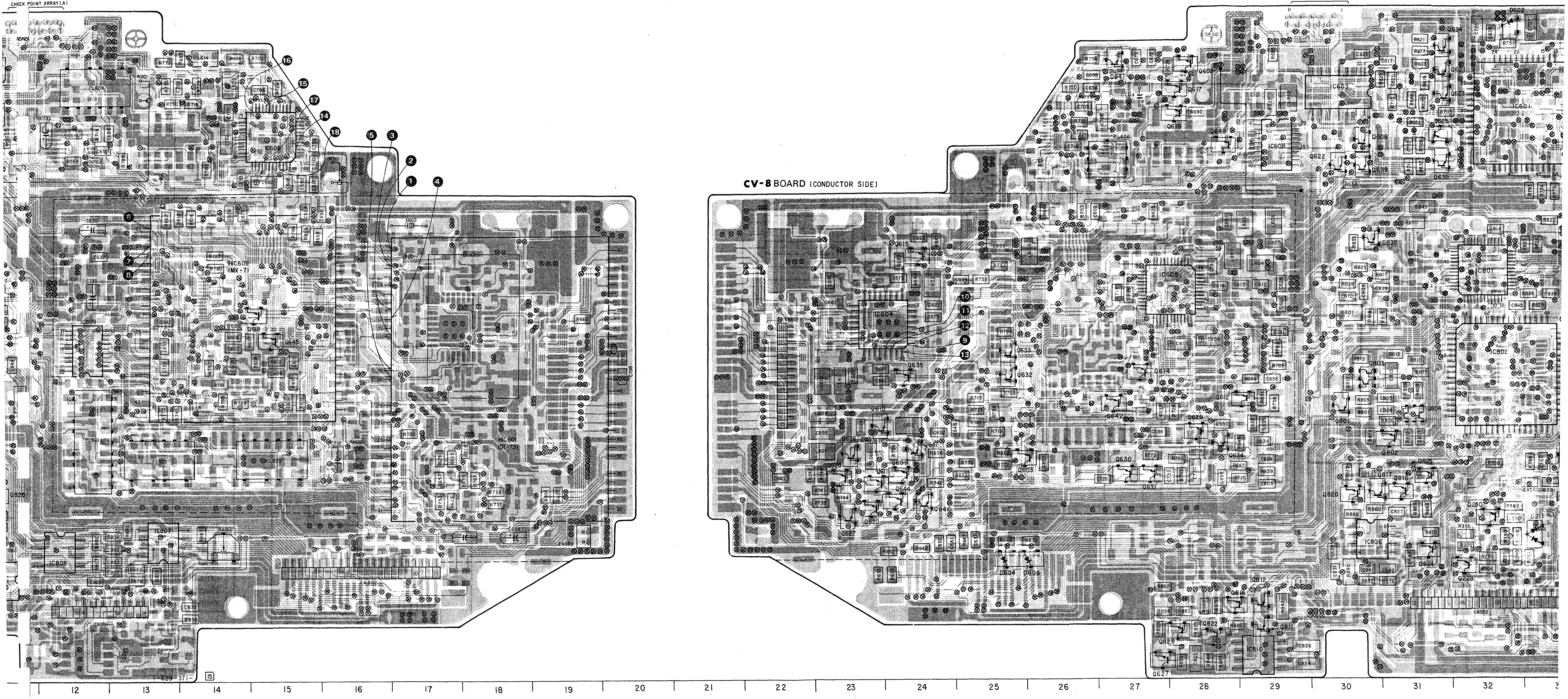
## CV-8 (CAMERA, VIDEO PROCESS) PRINTED WIRING BOARDS

— Ref. No. CV-8 BOARD : 2000 series —

CV-8 BOARD

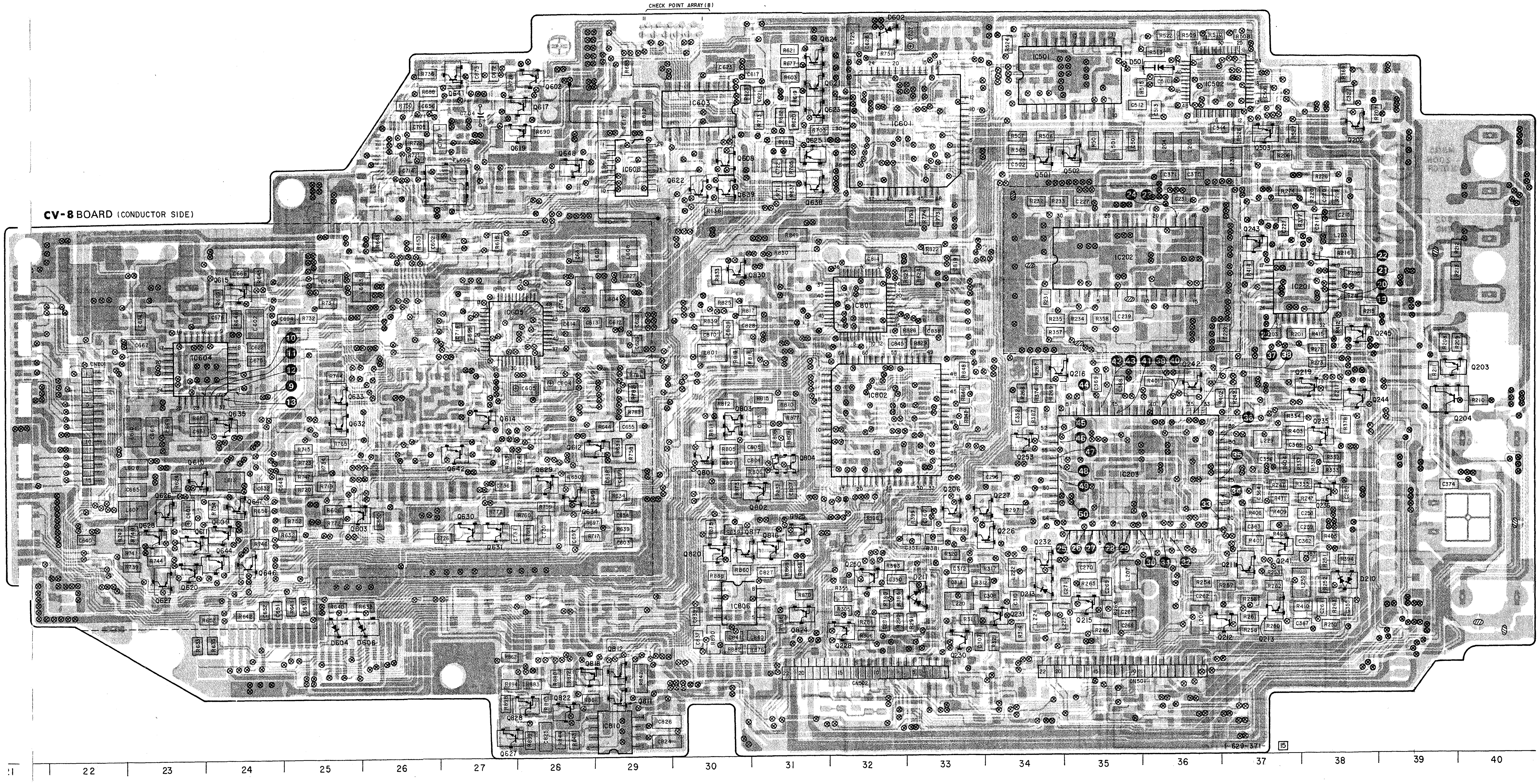
| | |
|---|---|
| CN501 | I-36 |
| CN502 | I-32 |
| CN601 | E-22 |
| CN602 | H-20 |
| CN801 | I-12 |
| CN802 | H-16 |
| CN803 | E-7 |
| CN901 | A-3 |
| CV501 | B-6 |
| CV502 | B-5 |
| D210 | H-38 |
| D211 | H-33 |
| D213 | H-34 |
| D214 | G-6 |
| D215 | G-5 |
| D216 | I-8 |
| D501 | A-36 |
| D601 | B-8 |
| D602 | A-33 |
| D604 | H-25 |
| D606 | H-26 |
| D804 | G-10 |
| IC201 | D-38 |
| IC202 | D-35 |
| IC203 | F-36 |
| IC501 | A-35 |
| IC502 | A-37 |
| IC601 | B-33 |
| IC602 | B-10 |
| IC603 | B-30 |
| IC604 | E-24 |
| IC605 | D-27 |
| IC606 | B-15 |
| IC608 | B-29 |
| IC609 | E-12 |
| IC610 | A-9 |
| IC801 | D-32 |
| IC802 | F-32 |
| IC803 | D-8 |
| IC804 | E-9 |
| IC805 | I-11 |
| IC806 | H-31 |
| IC807 | H-14 |
| IC809 | D-10 |
| IC810 | I-29 |
| Q202 | B-38 |
| Q203 | E-40 |
| Q204 | E-40 |
| Q206 | G-35 |
| Q207 | G-8 |
| Q210 | C-3 |
| Q211 | H-37 |
| Q212 | H-37 |
| Q213 | H-37 |
| Q214 | H-4 |
| Q215 | H-35 |
| Q216 | E-35 |
| Q217 | F-7 |
| Q219 | E-38 |
| Q222 | I-8 |
| Q223 | I-8 |
| Q224 | H-9 |
| Q225 | G-8 |
| Q226 | G-34 |
| Q227 | G-34 |
| Q228 | H-32 |
| Q229 | I-8 |
| Q230 | H-33 |
| Q231 | H-34 |
| Q232 | G-35 |
| Q233 | I-6 |
| Q235 | F-38 |
| Q236 | G-38 |
| Q241 | G-37 |
| Q242 | E-36 |
| Q243 | C-37 |
| Q244 | E-38 |
| Q245 | D-38 |
| Q250 | H-32 |
| Q251 | H-9 |
| Q252 | G-6 |
| Q253 | F-34 |
| Q254 | G-8 |
| Q501 | B-35 |
| Q502 | B-35 |
| Q503 | B-37 |
| Q551 | I-6 |
| Q552 | I-6 |
| Q553 | I-5 |
| Q602 | A-28 |
| Q603 | G-26 |
| Q604 | B-8 |
| Q605 | A-8 |
| Q606 | B-8 |
| Q607 | A-8 |
| Q608 | B-30 |
| Q609 | G-24 |
| Q610 | F-24 |
| Q611 | G-24 |
| Q612 | F-29 |
| Q614 | F-27 |
| Q615 | D-24 |
| Q617 | B-28 |
| Q618 | E-15 |
| Q619 | B-28 |
| Q620 | G-24 |
| Q621 | A-32 |
| Q622 | C-30 |
| Q623 | B-32 |
| Q624 | A-32 |
| Q625 | B-32 |
| Q626 | G-23 |
| Q627 | H-23 |
| Q628 | G-23 |
| Q629 | F-28 |
| Q630 | G-27 |
| Q631 | G-27 |
| Q632 | F-25 |
| Q633 | E-25 |
| Q634 | G-29 |
| Q635 | F-24 |
| Q638 | C-32 |
| Q639 | C-30 |
| Q641 | A-27 |
| Q642 | F-27 |
| Q644 | G-24 |
| Q645 | E-15 |
| Q646 | G-24 |
| Q647 | G-24 |
| Q648 | B-29 |
| Q801 | F-30 |
| Q802 | G-31 |
| Q803 | F-31 |
| Q804 | F-31 |
| Q806 | E-10 |
| Q807 | E-11 |
| Q809 | E-8 |
| Q810 | E-8 |
| Q811 | H-29 |
| Q812 | I-29 |
| Q816 | G-31 |
| Q817 | G-31 |
| Q818 | I-29 |
| Q819 | H-11 |
| Q820 | G-30 |
| Q822 | I-28 |
| Q824 | H-31 |
| Q825 | G-31 |
| Q826 | G-11 |
| Q827 | I-27 |
| Q828 | I-28 |
| Q830 | D-31 |
| RV201 | F-3 |
| RV202 | G-6 |
| RV203 | G-5 |
| RV204 | G-4 |
| RV205 | G-4 |
| RV206 | H-4 |
| RV207 | G-5 |
| RV208 | I-7 |
| RV209 | F-4 |
| RV552 | I-7 |
| RV801 | H-14 |


CV-8 BOARD
(COMPONENT SIDE)
CHECK POINT ARRAY (A)
J202
AUDIO IN
VIDEO IN
J201
AUDIO OUT
PFU DC OUT
VIDEO OUT
A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
IC602
IC605
IC606
IC608
IC805
IC807
IC808
Q210
Q214
Q215
Q551
Q552
Q553
Q604
Q605
Q606
Q607
D601
RV201
RV203
RV204
RV205
RV208
RV552
W201
W301
W701
❶
❷
❸
❹
❺
❻
❼
❽
⓮
⓯
⓰
⓱
⓲


CHECK POINT ARRAY (A)
CHECK POINT ARRAY (B)
HIC602 (MX-7)
HIC601 (DT-73)
IC609
IC603
IC605
IC606
IC801
IC802
IC806
IC808
IC807
IC810
1-629-37(-
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32

**CV-8** BOARD (CONDUCTOR SIDE)

**CV-8 BOARD** (CONDUCTOR SIDE)


CHECK POINT ARRAY (B)
IC604
IC605
IC608
IC603
IC601
IC501
IC502
IC801
IC802
IC202
IC201
IC203
IC806
IC810
CN801
CN502
CN501
1-629-371-
15
21
22
23
24
25
26
27
26
29
30
31
32
33
34
35
36
37
38
39
40

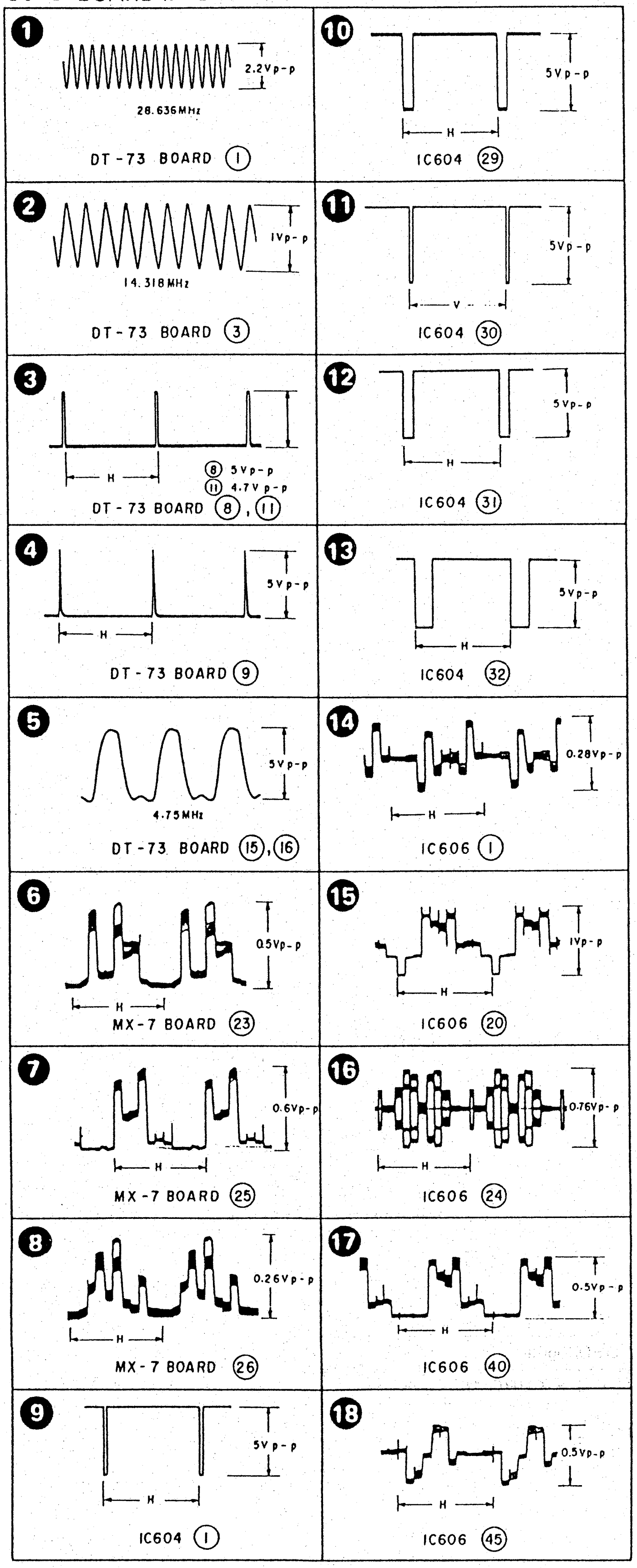
## CV-8 (CAMERA) SCHEMATIC DIAGRAMS

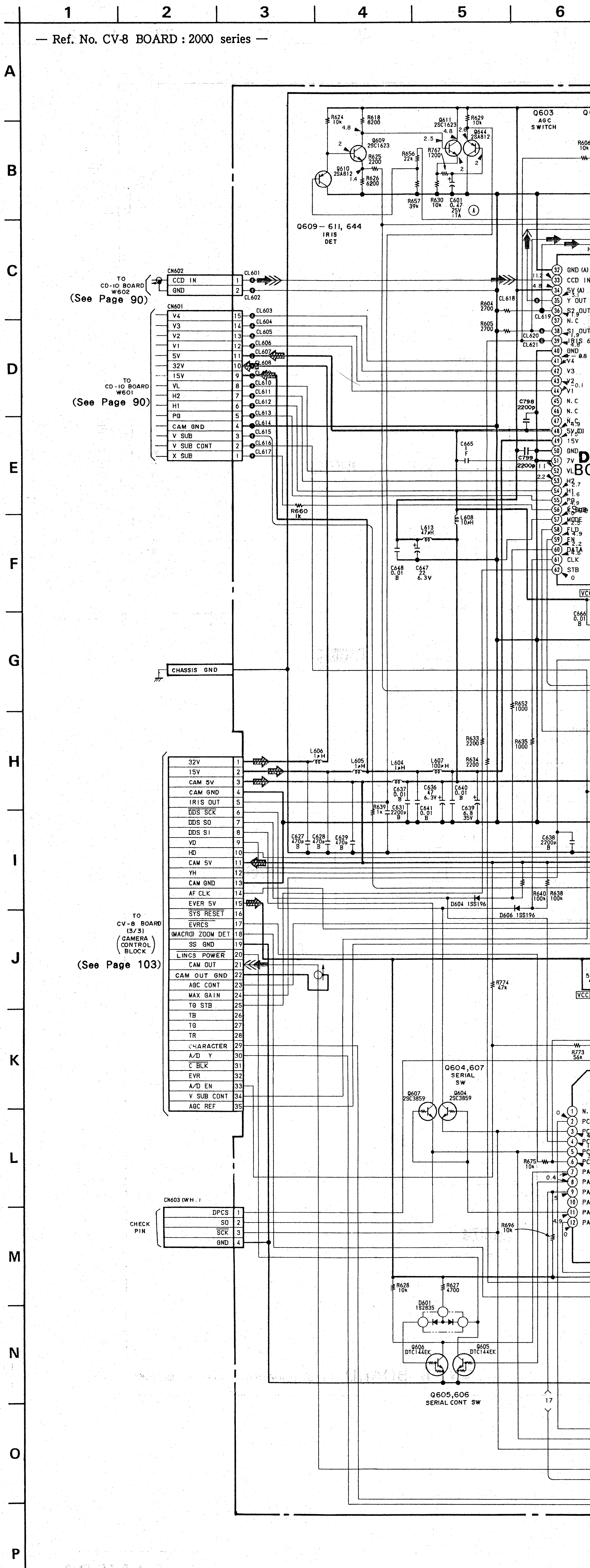
— Ref. No. CV-8 BOARD : 2000 series —

- Signal path

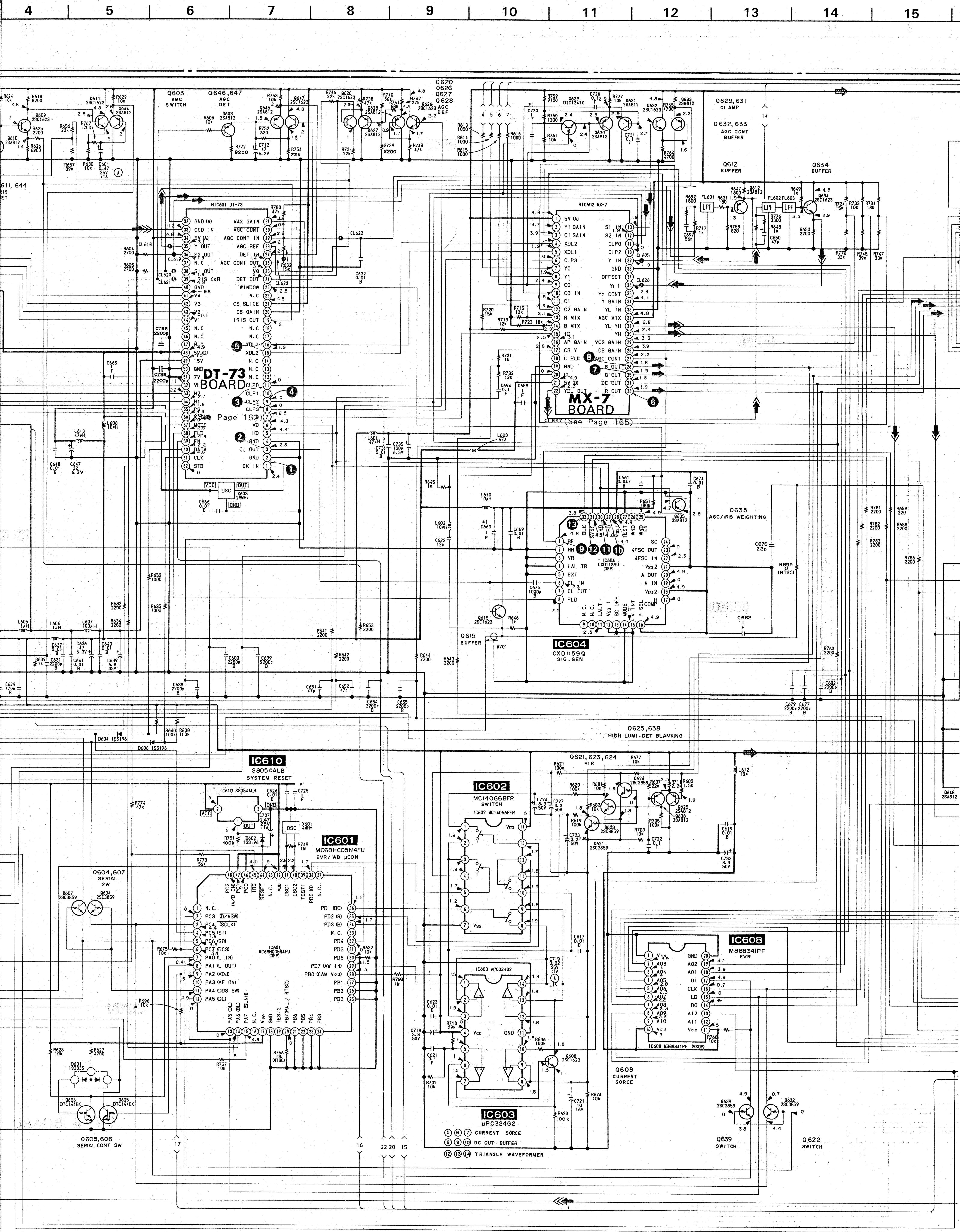
| | VIDEO Signal | | | AUDIO Signal |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | ➡ | ➡ | ➡ | |
| PB | | | | |

**CV-8** BOARD (CAMERA)

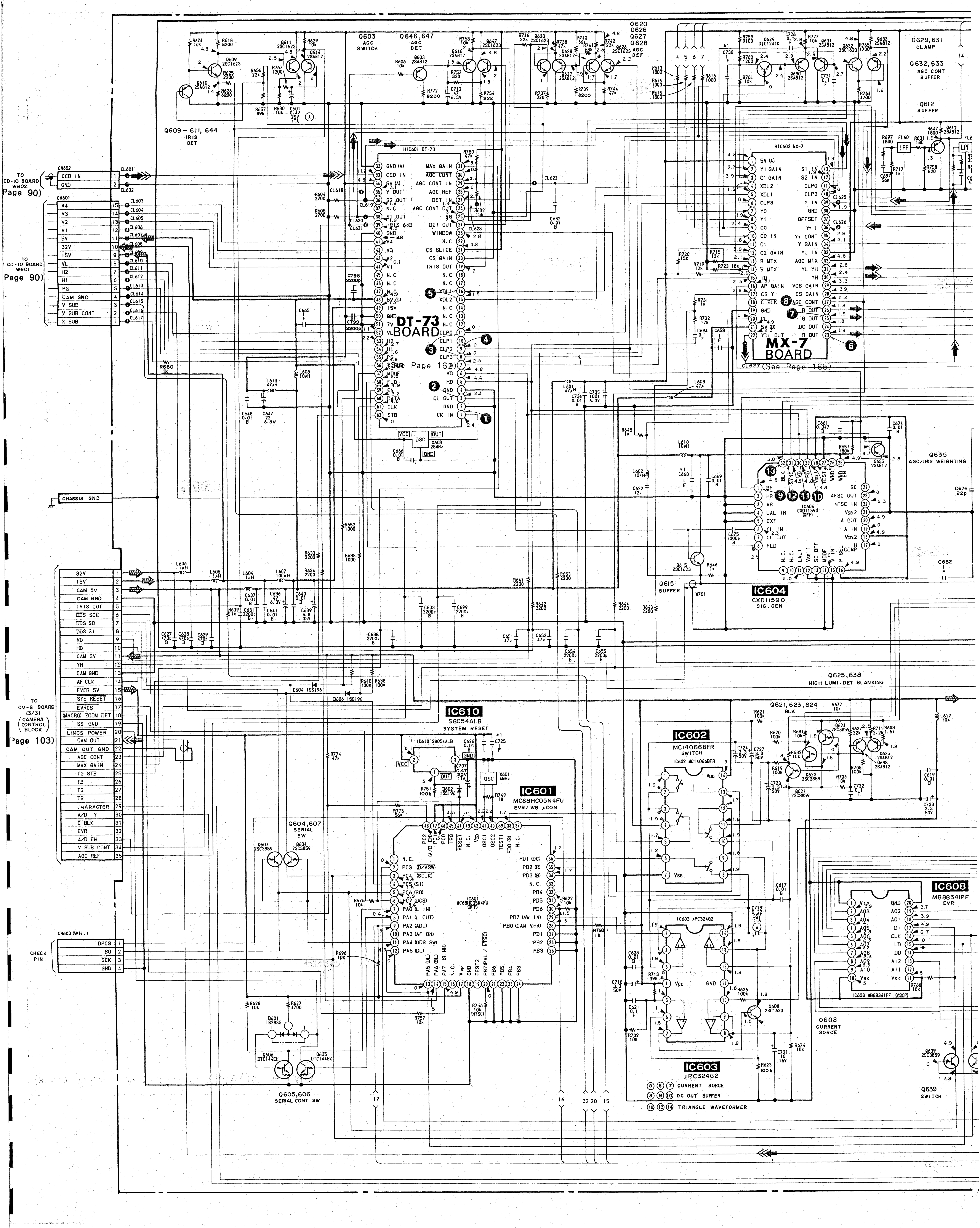


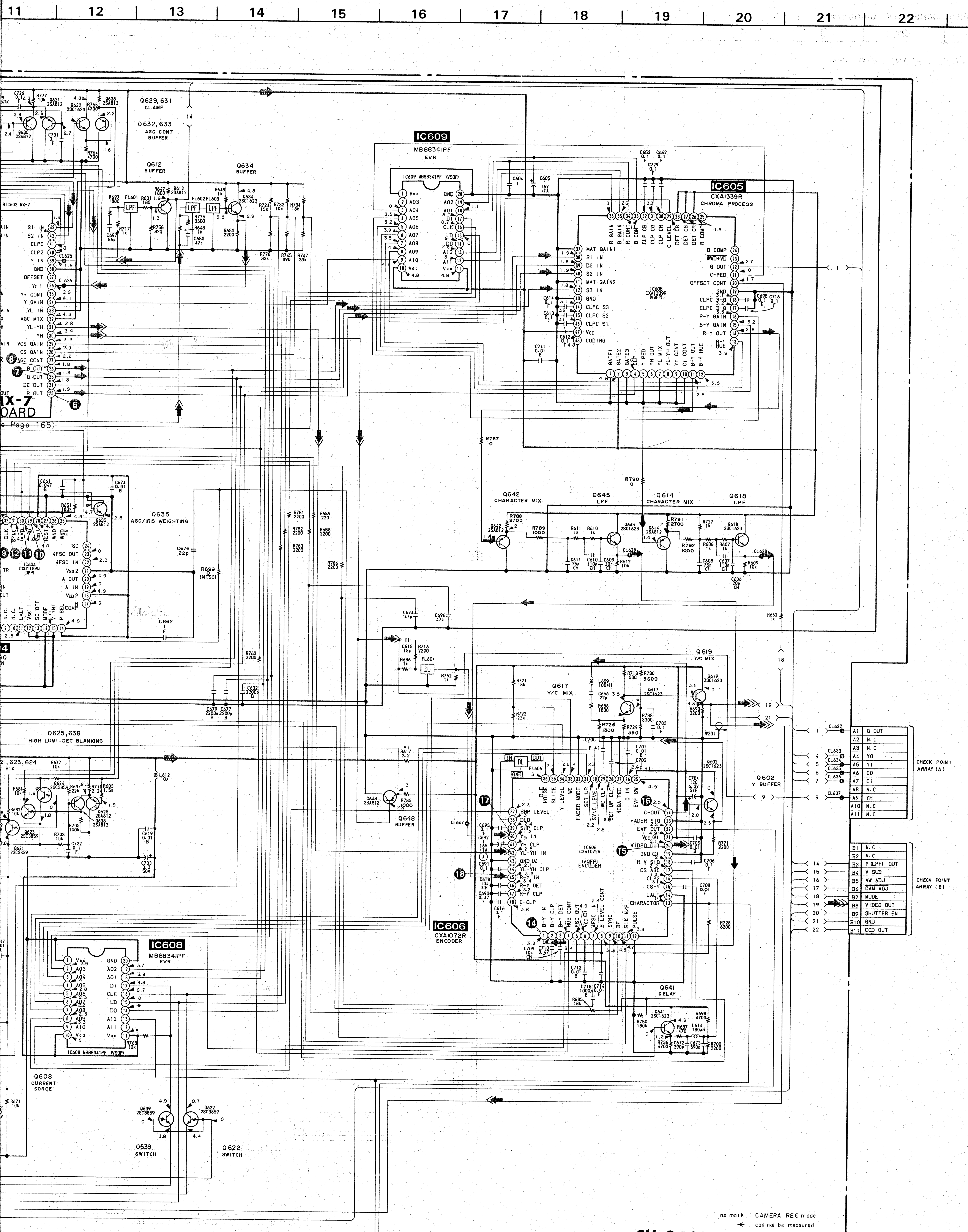


1
2
3
4
5
6
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q603 AGC SWITCH
Q609-611, 644 IRIS DET
Q609 2SC1623
Q610 2SA812
Q611 2SC1623
Q644 2SA812
TO CD-10 BOARD W602 (See Page 90)
CN602
CCD IN
GND
TO CD-10 BOARD W601 (See Page 90)
CN601
V4
V3
V2
V1
5V
32V
15V
VL
H2
H1
PG
CAM GND
V SUB
V SUB CONT
X SUB
CHASSIS GND
TO CV-8 BOARD (3/3) (CAMERA CONTROL BLOCK) (See Page 103)
32V
15V
CAM 5V
CAM GND
IRIS OUT
DDS SCK
DDS SO
DDS SI
VD
HD
CAM 5V
YH
CAM GND
AF CLK
EVER 5V
SYS RESET
EVRCS
(MACRO) ZOOM DET
SS GND
LINCS POWER
CAM OUT
CAM OUT GND
AGC CONT
MAX GAIN
TG STB
TB
TG
TR
CHARACTER
A/D Y
C BLK
EVR
A/D EN
V SUB CONT
AGC REF
CN603 (WH)
CHECK PIN
DPCS
SO
SCK
GND
Q604,607 SERIAL SW
Q607 2SC3859
Q604 2SC3859
Q605,606 SERIAL CONT SW
Q606 DTC144EK
Q605 DTC144EK
D601 1S2835
D604 1SS196
D606 1SS196
GND (A)
CCD IN
5V (A)
Y OUT
S2 OUT
N.C
S1 OUT
IRIS
GND
V4
V3
V2
V1
N.C
N.C
N.C
5V (D)
15V
GND
7V
VL
H2
H1
PG
MODE
FLD
EN
DATA
CLK
STB


4
5
6
7
8
9
10
11
12
13
14
15
Q603 AGC SWITCH
Q646,647 AGC DET
Q620 Q626 Q627 Q628 AGC DEF
Q629,631 CLAMP
Q632,633 AGC CONT BUFFER
Q612 BUFFER
Q634 BUFFER
HIC601 DT-73
DT-73 BOARD
(See Page 162)
HIC602 MX-7
MX-7 BOARD
(See Page 165)
GND (A)
CCD IN
5V (A)
Y OUT
S2 OUT
N.C
S1 OUT
15V
GND
V4
V3
V2
V1
MAX GAIN
AGC CONT
AGC CONT IN
AGC REF
DET IN
AGC CONT OUT
YG
DET OUT
WINDOW
CS SLICE
CS GAIN
IRIS OUT
XDL1
XDL2
CLP0
CLP1
CLP2
CLP3
VD
HD
CL OUT
CK IN
STB
CLK
DATA
EN
FLD
MODE
OSC
X603 28MHz
5V (A)
Y1 GAIN
C1 GAIN
XDL2
XDL1
CLP3
Y0
Y1
C0
C0 IN
C1
C2 GAIN
R MTX
B MTX
AP GAIN
CS Y
C BLK
S1 IN
S2 IN
CLP0
CLP2
Y IN
OFFSET
Yr 1
Yr CONT
Y GAIN
YL IN
AGC MTX
YL-YH
YH
VCS GAIN
CS GAIN
AGC CONT
B OUT
G OUT
DC OUT
R OUT
YDL OUT
Q635 AGC/IRIS WEIGHTING
IC604 CXD1159Q
SIG. GEN
BF
HR
VR
LAL TR
EXT
CL IN
CL OUT
FLD
SC
4FSC OUT
4FSC IN
A OUT
A IN
SYNC
BLK
TEST
WND
Q615 BUFFER
Q625,638 HIGH LUMI. DET BLANKING
Q621,623,624 BLK
IC610 S8054ALB SYSTEM RESET
IC601 MC68HC05N4FU EVR/WB μCON
X601 4MHz
IC602 MC14066BFR SWITCH
IC603 μPC324G2
⑤⑥⑦ CURRENT SORCE
⑧⑨⑩ DC OUT BUFFER
⑫⑬⑭ TRIANGLE WAVEFORMER
IC608 MB88341PF EVR
Q608 CURRENT SORCE
Q604,607 SERIAL SW
Q605,606 SERIAL CONT SW
Q639 SWITCH
Q622 SWITCH
D601 1S2835
D604 1SS196
D606 1SS196
D602 1SS196
W701

CV-8 BOARD : 2000 series —

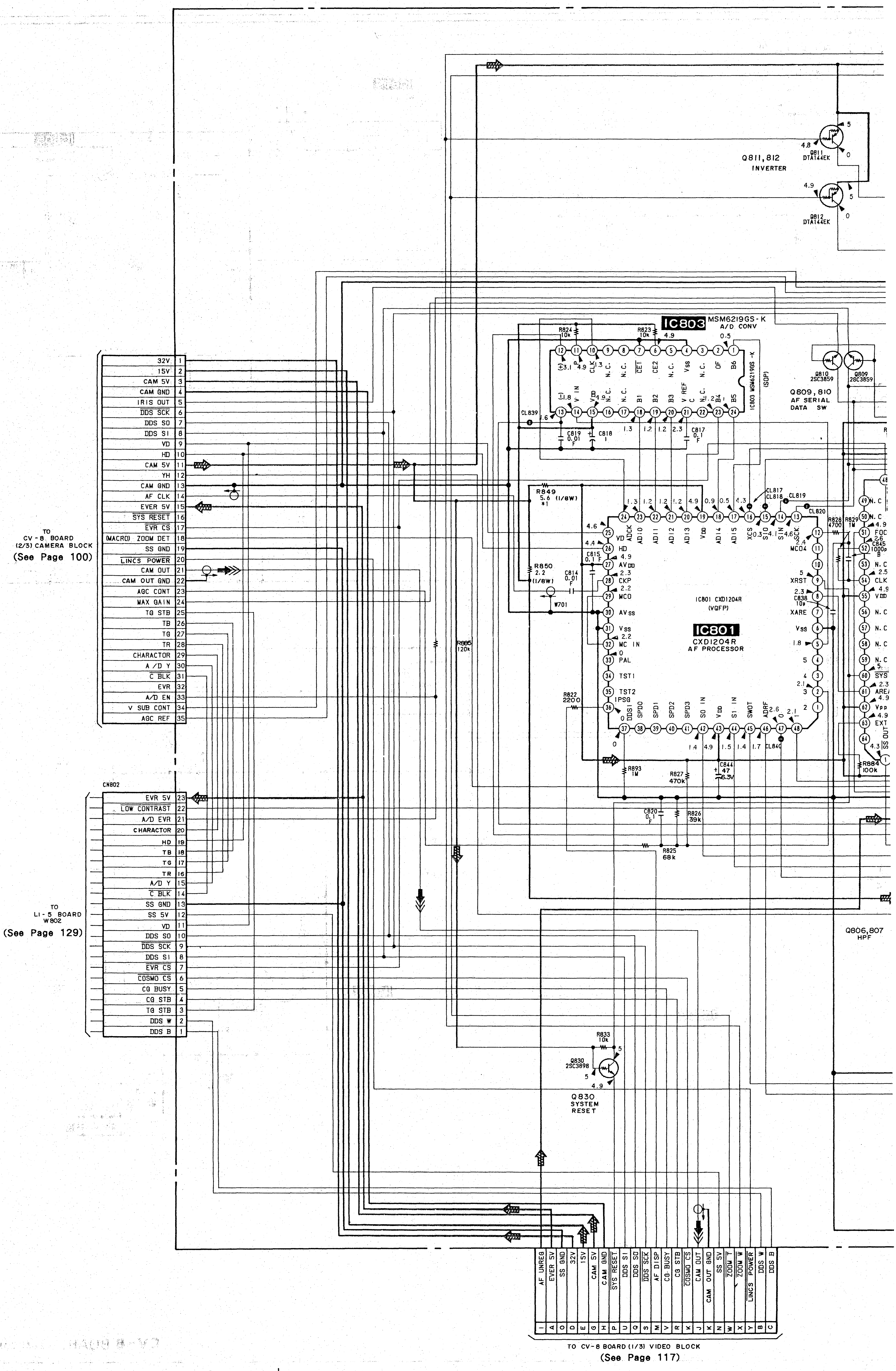

TO CD-10 BOARD W602 (Page 90)
TO CD-10 BOARD W601 (Page 90)
CN602
CN601
CCD IN
GND
V4
V3
V2
V1
5V
32V
15V
VL
H2
H1
PG
CAM GND
V SUB
V SUB CONT
X SUB
CHASSIS GND
Q609-611, 644 IRIS DET
Q603 AGC SWITCH
Q646, 647 AGC DET
Q620 Q626 Q627 Q628 AGC DEF
Q629, 631 CLAMP
Q632, 633 AGC CONT BUFFER
Q612 BUFFER
HIC601 DT-73
DT-73 BOARD (See Page 162)
HIC602 MX-7
MX-7 BOARD (See Page 165)
Q635 AGC/IRIS WEIGHTING
IC604 CXD1159Q SIG. GEN
Q615 BUFFER
Q625, 638 HIGH LUMI·DET BLANKING
Q621, 623, 624 BLK
IC602 MC14066BFR SWITCH
IC610 S8054ALB SYSTEM RESET
IC601 MC68HC05N4FU EVR/WB μCON
IC603 μPC324G2
⑤⑥⑦ CURRENT SORCE
⑧⑨⑩ DC OUT BUFFER
⑫⑬⑭ TRIANGLE WAVEFORMER
IC608 MB88341PF EVR
Q608 CURRENT SORCE
Q639 SWITCH
Q604, 607 SERIAL SW
Q605, 606 SERIAL CONT SW
TO CV-8 BOARD (3/3) (CAMERA CONTROL BLOCK) (Page 103)
32V
15V
CAM 5V
CAM GND
IRIS OUT
DDS SCK
DDS SO
DDS SI
VD
HD
CAM 5V
YH
CAM GND
AF CLK
EVER 5V
SYS RESET
EVRCS
(MACRO) ZOOM DET
SS GND
LINCS POWER
CAM OUT
CAM OUT GND
AGC CONT
MAX GAIN
TG STB
TB
TG
TR
CHARACTER
A/D Y
C BLK
EVR
A/D EN
V SUB CONT
AGC REF
CN603 (WH)
CHECK PIN
DPCS
SO
SCK
GND

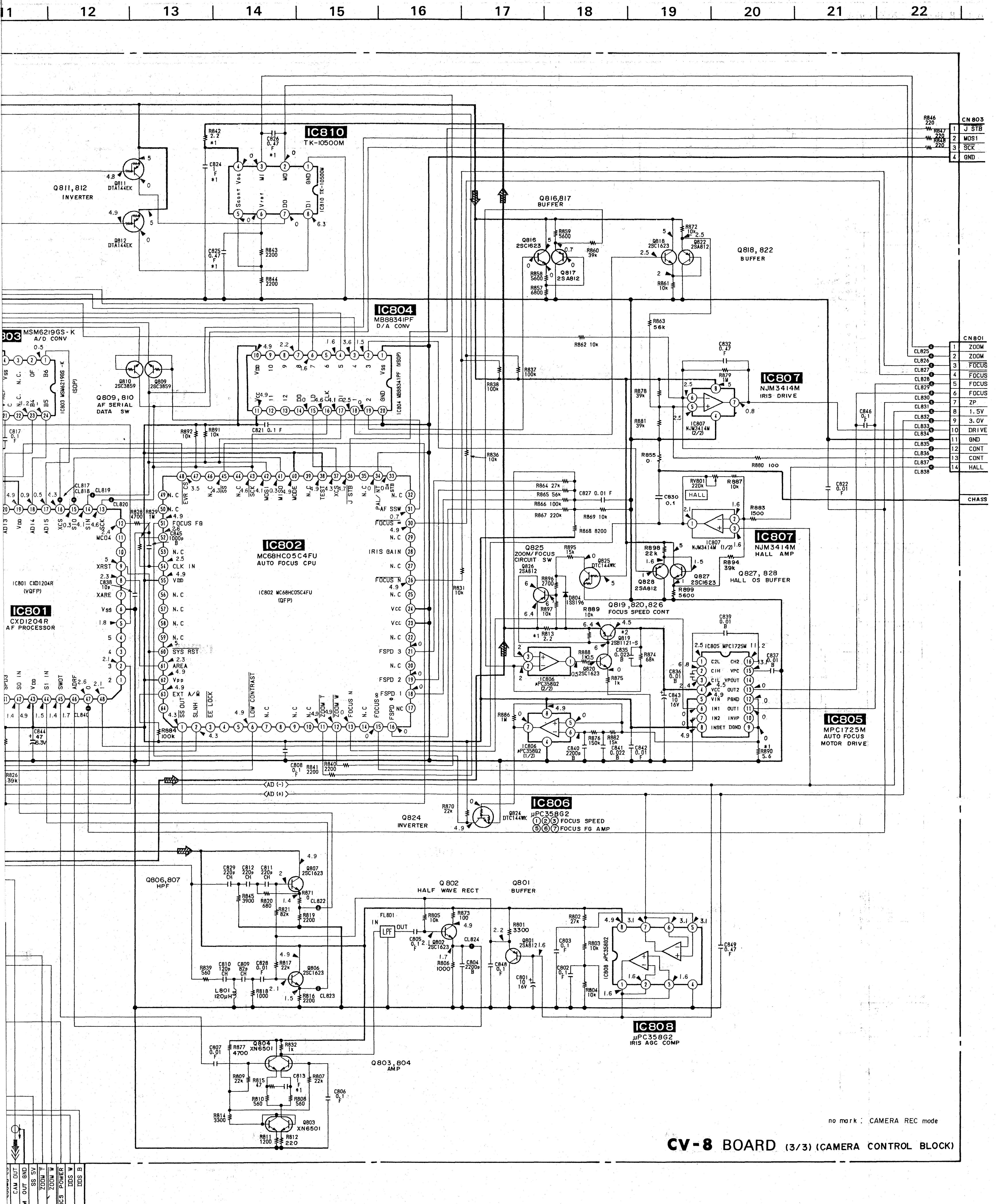

11
12
13
14
15
16
17
18
19
20
21
22
Q629, 631 CLAMP
Q632, 633 AGC CONT BUFFER
Q612 BUFFER
Q634 BUFFER
IC609 MB88341PF EVR
IC605 CXA1339R CHROMA PROCESS
MX-7 BOARD
Q635 AGC/IRIS WEIGHTING
IC604 CXD1159Q
Q642 CHARACTER MIX
Q645 LPF
Q614 CHARACTER MIX
Q618 LPF
Q619 Y/C MIX
Q617 Y/C MIX
Q625, 638 HIGH LUMI. DET BLANKING
Q648 BUFFER
Q602 Y BUFFER
IC606 CXA1072R ENCODER
Q641 DELAY
IC608 MB88341PF EVR
Q608 CURRENT SORCE
Q639 SWITCH
Q622 SWITCH
A1 G OUT
A2 N.C
A3 N.C
A4 Y0
A5 Y1
A6 C0
A7 C1
A8 N.C
A9 YH
A10 N.C
A11 N.C
CHECK POINT ARRAY (A)
B1 N.C
B2 N.C
B3 Y (LPF) OUT
B4 V SUB
B5 AW ADJ
B6 CAM ADJ
B7 MODE
B8 VIDEO OUT
B9 SHUTTER EN
B10 GND
B11 CCD OUT
CHECK POINT ARRAY (B)

no mark : CAMERA REC mode
✱ : can not be measured

**CV-8 BOARD (2/3)(CAMERA BLOCK)**

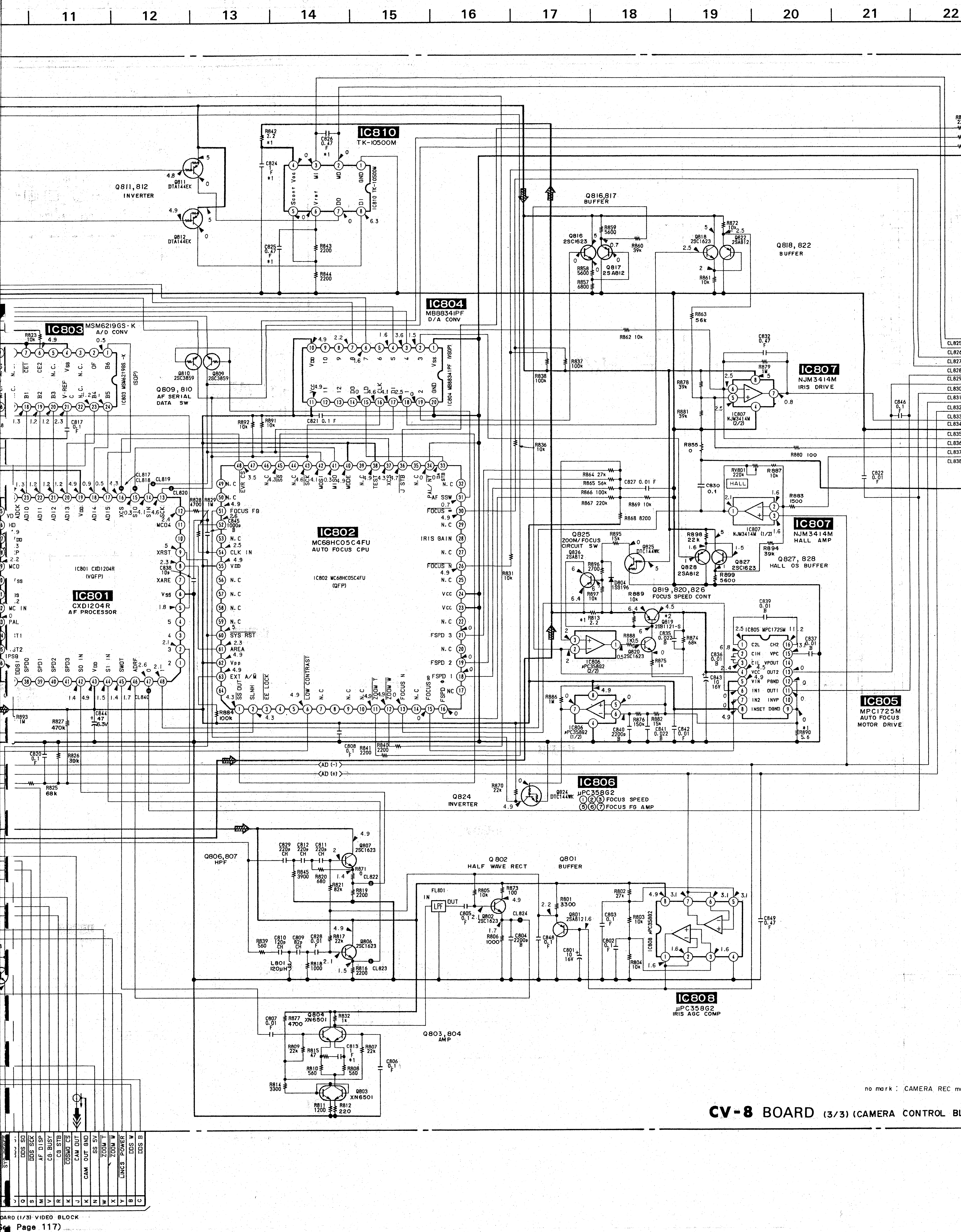
No. CV-8 BOARD : 2000 series —


IC803 MSM6219GS-K A/D CONV
IC801 CXD1204R AF PROCESSOR
Q811,812 INVERTER
Q811 DTA144EK
Q812 DTA144EK
Q809,810 AF SERIAL DATA SW
Q810 2SC3859
Q809 2SC3859
Q806,807 HPF
Q830 SYSTEM RESET
Q830 2SC3898
TO CV-8 BOARD (2/3) CAMERA BLOCK (See Page 100)
TO LI-5 BOARD W802 (See Page 129)
CN802
TO CV-8 BOARD (1/3) VIDEO BLOCK (See Page 117)
32V
15V
CAM 5V
CAM GND
IRIS OUT
DDS SCK
DDS SO
DDS SI
VD
HD
CAM 5V
YH
CAM GND
AF CLK
EVER 5V
SYS RESET
EVR CS
(MACRO) ZOOM DET
SS GND
LINCS POWER
CAM OUT
CAM OUT GND
AGC CONT
MAX GAIN
TG STB
TB
TG
TR
CHARACTOR
A/D Y
C BLK
EVR
A/D EN
V SUB CONT
AGC REF
EVR 5V
LOW CONTRAST
A/D EVR
CHARACTOR
HD
TB
TG
TR
A/D Y
C BLK
SS GND
SS 5V
VD
DDS SO
DDS SCK
DDS SI
EVR CS
COSMO CS
CG BUSY
CG STB
TG STB
DDS W
DDS B
AF UNREG
EVER 5V
SS GND
32V
15V
CAM 5V
CAM GND
SYS RESET
DDS SI
DDS SO
DDS SCK
AF DISP
CG BUSY
CG STB
COSMO CS
CAM OUT
CAM OUT GND
SS 5V
ZOOM T
ZOOM W
LINCS POWER
DDS W
DDS B
R824 10k
R823 10k
R849 5.6 (1/8W)
R850 2.2 (1/8W)
R885 120k
R822 2200
R893 1M
R827 470k
R826 39k
R825 68k
R828 4700
R829 1M
R884 100k
R833 10k
C819 0.01
C818 1
C817 0.1
C815 0.1
C814 0.01
C820 0.1
C844 47 6.3V
C838 10μ
C845 1000p
CL839
CL817
CL818
CL819
CL820
CL840
W701
V IN
CLK
CET
CE2
V REF
Vss
OF
B1
B2
B3
B4
B5
B6
VD
HD
AVDD
CKP
MCO
AVss
Vss
MC IN
PAL
TST1
TST2
IPSG
ADCK
AD10
AD11
AD12
AD13
VDD
AD14
AD15
XCS
SIO
SIN
SCK
MCO4
XRST
XARE
DDSI
SPD0
SPD1
SPD2
SPD3
SO IN
S1 IN
SWOT
ADRF
N.C
FOC
CLK
VDD
SYS
ARE
Vpp
EXT
SS OUT


11
12
13
14
15
16
17
18
19
20
21
22
IC810
TK-10500M
IC804
MB88341PF
D/A CONV
MSM6219GS-K
A/D CONV
IC802
MC68HC05C4FU
AUTO FOCUS CPU
IC801
CXD1204R
AF PROCESSOR
IC807
NJM3414M
IRIS DRIVE
IC807
NJM3414M
HALL AMP
IC805
MPC1725M
AUTO FOCUS
MOTOR DRIVE
IC806
μPC358G2
①②③ FOCUS SPEED
⑤⑥⑦ FOCUS FG AMP
IC808
μPC358G2
IRIS AGC COMP
Q811, 812
INVERTER
Q809, 810
AF SERIAL
DATA SW
Q816, 817
BUFFER
Q818, 822
BUFFER
Q825
ZOOM/FOCUS
CIRCUIT SW
Q819, 820, 826
FOCUS SPEED CONT
Q827, 828
HALL OS BUFFER
Q824
INVERTER
Q806, 807
HPF
Q802
HALF WAVE RECT
Q801
BUFFER
Q803, 804
AMP
CN803
J STB
MOSI
SCK
GND
CN801
ZOOM
ZOOM
FOCUS
FOCUS
FOCUS
ZP
1.5V
3.0V
DRIVE
GND
CONT
CONT
HALL
CHASS
CAM OUT
CAM OUT GND
SS 5V
ZOOM T
ZOOM W
LINCS POWER
DDS W
DDS B

no mark : CAMERA REC mode

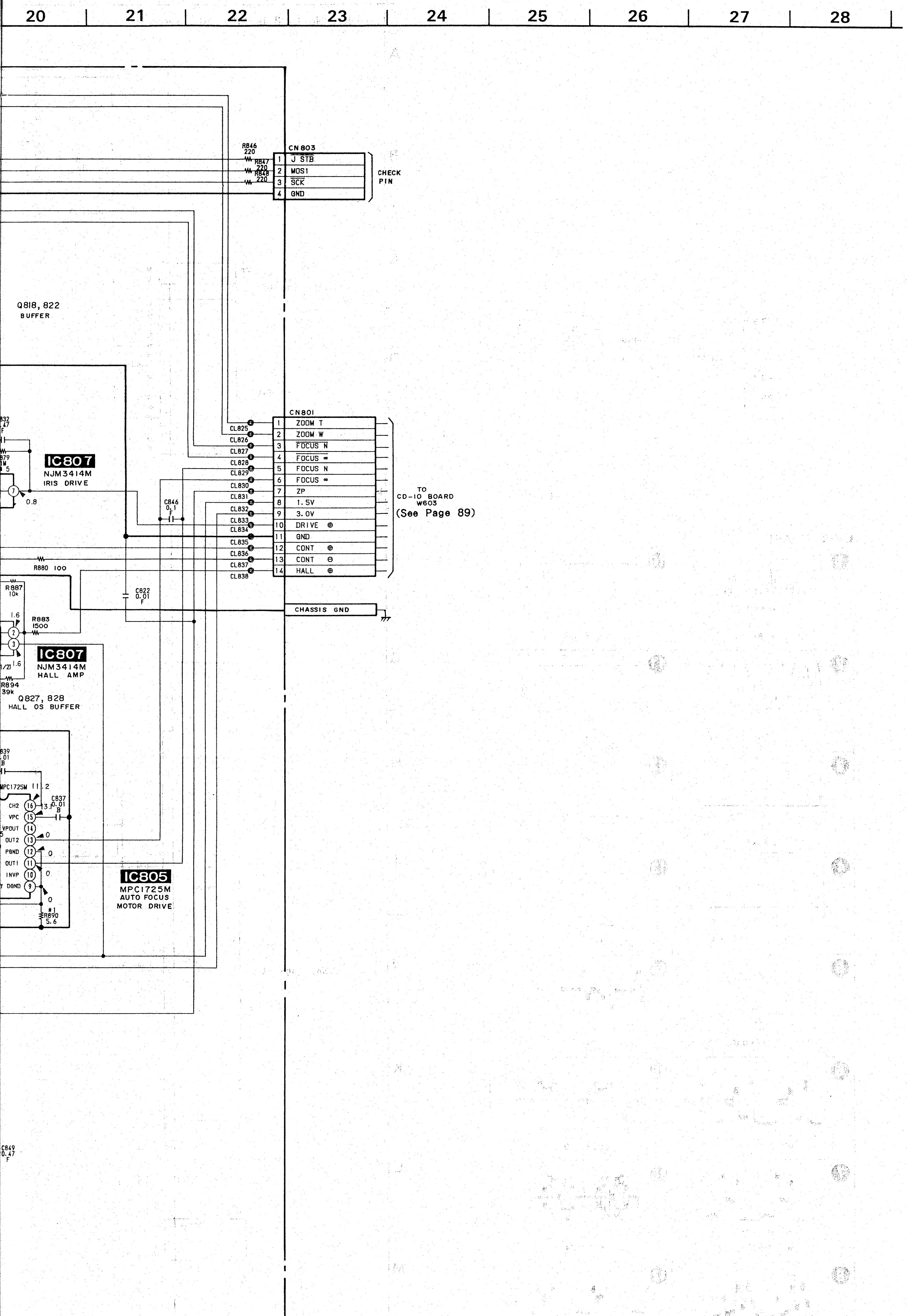
**CV-8** BOARD (3/3) (CAMERA CONTROL BLOCK)


11
12
13
14
15
16
17
18
19
20
21
22
IC810
TK-10500M
Q811, 812
INVERTER
Q811
DTA144EK
Q812
DTA144EK
Q816, 817
BUFFER
Q816
2SC1623
Q817
2SA812
Q818, 822
BUFFER
Q818
2SC1623
Q822
2SA812
IC803
MSM6219GS-K
A/D CONV
Q809, 810
AF SERIAL
DATA SW
Q810
2SC3859
Q809
2SC3859
IC804
MB88341PF
D/A CONV
IC807
NJM3414M
IRIS DRIVE
IC807
NJM3414M
HALL AMP
Q827, 828
HALL OS BUFFER
Q827
2SC1623
Q828
2SA812
IC801
CXD1204R
AF PROCESSOR
IC801 CXD1204R
(VQFP)
IC802
MC68HC05C4FU
AUTO FOCUS CPU
IC802 MC68HC05C4FU
(QFP)
Q825
ZOOM/FOCUS
CIRCUIT SW
Q826
2SA812
Q825
DTC144WK
D804
1SS196
Q819, 820, 826
FOCUS SPEED CONT
Q819
2SB1121-S
Q820
2SC1623
IC806
μPC358G2
(2/2)
IC806
μPC358G2
(1/2)
IC805
MPC1725M
AUTO FOCUS
MOTOR DRIVE
IC806
μPC358G2
①②③ FOCUS SPEED
⑤⑥⑦ FOCUS FG AMP
Q824
INVERTER
Q824
DTC144WK
AD (−)
AD (+)
Q806, 807
HPF
Q807
2SC1623
Q806
2SC1623
L801
120μH
Q802
HALF WAVE RECT
Q802
2SC1623
Q801
BUFFER
Q801
2SA812
FL801
LPF
IN
OUT
IC808
μPC358G2
IRIS AGC COMP
Q803, 804
AMP
Q804
XN6501
Q803
XN6501
DDS SO
DDS SCK
AF DISP
CB BUSY
CB STB
COSMO CS
CAM OUT
CAM OUT GND
SS 5V
ZOOM T
ZOOM W
LINCS POWER
DDS W
DDS B

no mark : CAMERA REC mo

**CV-8** BOARD (3/3) (CAMERA CONTROL BL

ARD (1/3) VIDEO BLOCK
Page 117)


20
21
22
23
24
25
26
27
28
R846 220
R847 220
R848 220
CN803
1 J STB
2 MOS1
3 SCK
4 GND
CHECK PIN
Q818, 822 BUFFER
IC807
NJM3414M
IRIS DRIVE
0.8
CN801
1 ZOOM T
2 ZOOM W
3 FOCUS N
4 FOCUS ∞
5 FOCUS N
6 FOCUS ∞
7 ZP
8 1.5V
9 3.0V
10 DRIVE ⊕
11 GND
12 CONT ⊕
13 CONT ⊖
14 HALL ⊕
CL825
CL826
CL827
CL828
CL829
CL830
CL831
CL832
CL833
CL834
CL835
CL836
CL837
CL838
C846 0.1 F
TO CD-10 BOARD W603
(See Page 89)
R880 100
R887 10k
C822 0.01 F
CHASSIS GND
1.6
R883 1500
IC807
NJM3414M
HALL AMP
1.6
R894 39k
Q827, 828
HALL OS BUFFER
C839 0.01 B
μPC1725M
CH2 16
VPC 15
VPOUT 14
OUT2 13
PGND 12
OUT1 11
INVP 10
DGND 9
3.0
C837 0.01 B
0
0
0
0
#1 R890 5.6
IC805
μPC1725M
AUTO FOCUS
MOTOR DRIVE
C849 0.47 F

no mark : CAMERA REC mode

BOARD (3/3) (CAMERA CONTROL BLOCK)

- Signal path

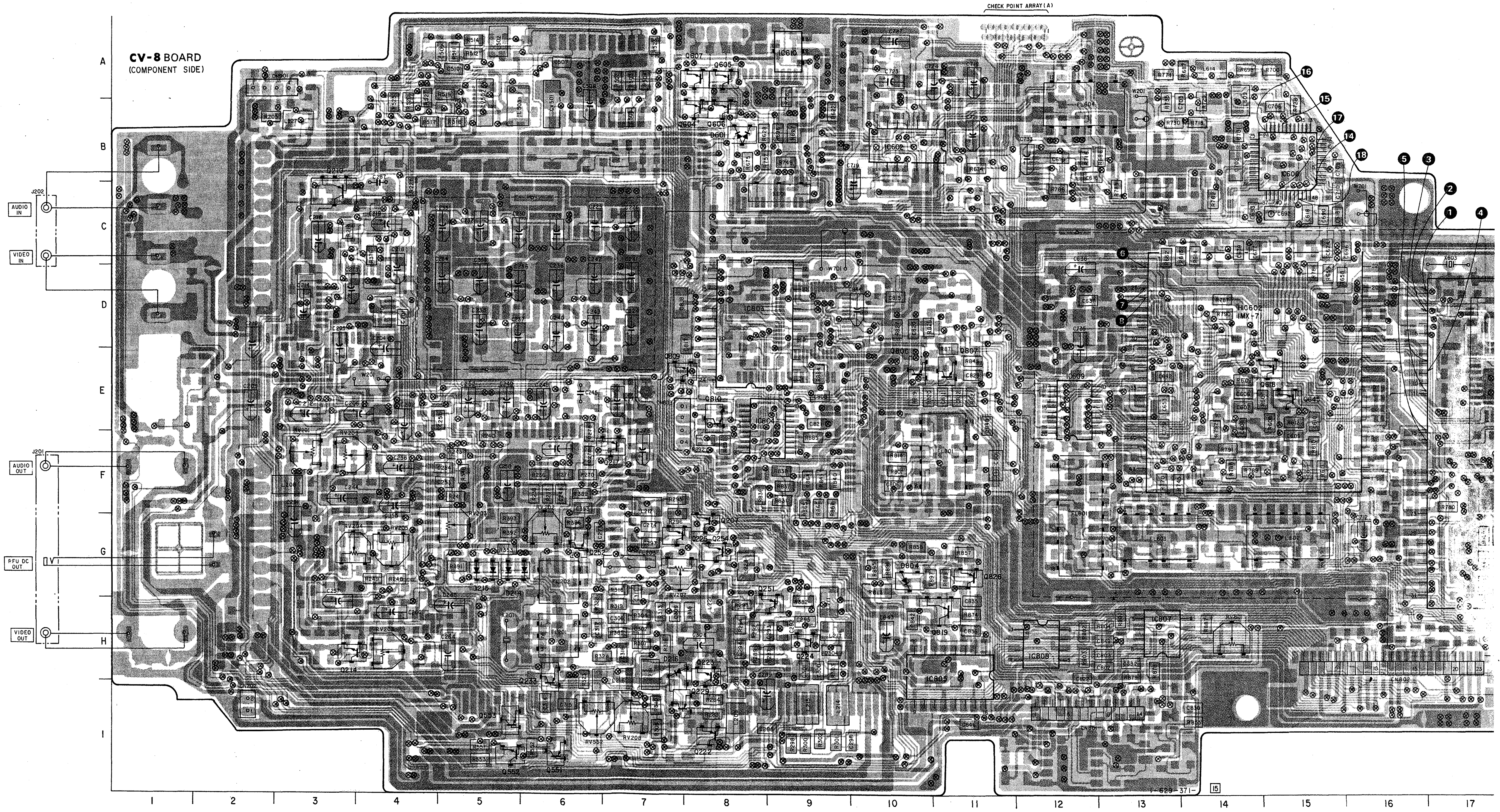
| | VIDEO Signal | | | AUDIO Signal |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | | | ➡≫ | |
| PB | | | | |

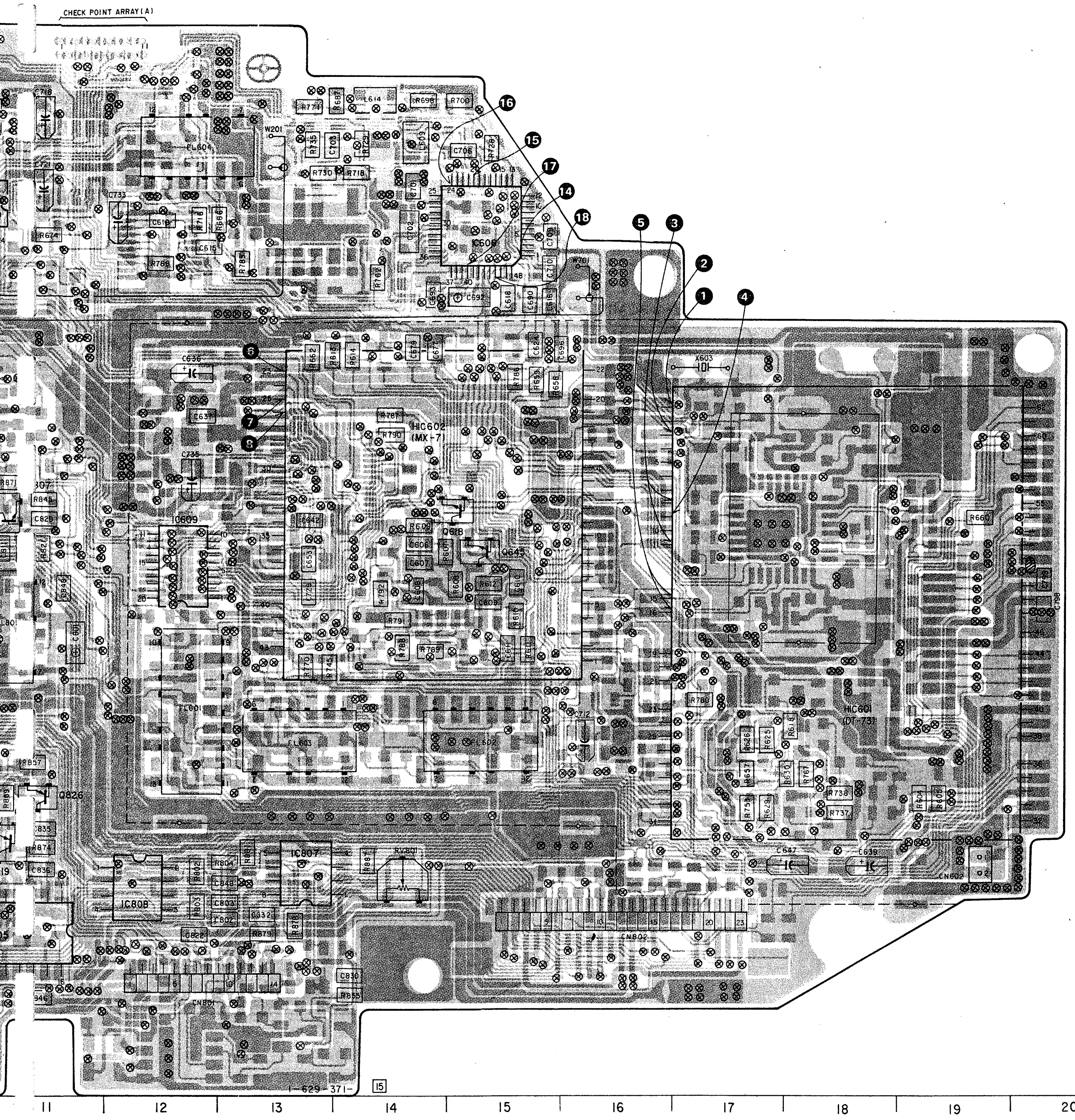
## CV-8 (CAMERA, VIDEO PROCESS) PRINTED WIRING BOARDS

— Ref. No. CV-8 BOARD : 2000 series —

CV-8 BOARD

| | |
|---|---|
| CN501 | I-36 |
| CN502 | I-32 |
| CN601 | E-22 |
| CN602 | H-20 |
| CN801 | I-12 |
| CN802 | H-16 |
| CN803 | E-7 |
| CN901 | A-3 |
| CV501 | B-6 |
| CV502 | B-5 |
| D210 | H-38 |
| D211 | H-33 |
| D213 | H-34 |
| D214 | G-6 |
| D215 | G-5 |
| D216 | I-8 |
| D501 | A-36 |
| D601 | B-8 |
| D602 | A-33 |
| D604 | H-25 |
| D606 | H-26 |
| D804 | G-10 |
| IC201 | D-38 |
| IC202 | D-35 |
| IC203 | F-36 |
| IC501 | A-35 |
| IC502 | A-37 |
| IC601 | B-33 |
| IC602 | B-10 |
| IC603 | B-30 |
| IC604 | E-24 |
| IC605 | D-27 |
| IC606 | B-15 |
| IC608 | B-29 |
| IC609 | E-12 |
| IC610 | A-9 |
| IC801 | D-32 |
| IC802 | F-32 |
| IC803 | D-8 |
| IC804 | E-9 |
| IC805 | I-11 |
| IC806 | H-31 |
| IC807 | H-14 |
| IC809 | D-10 |
| IC810 | I-29 |
| Q202 | B-38 |
| Q203 | E-40 |
| Q204 | E-40 |
| Q206 | G-35 |
| Q207 | G-8 |
| Q210 | C-3 |
| Q211 | H-37 |
| Q212 | H-37 |
| Q213 | H-37 |
| Q214 | H-4 |
| Q215 | H-35 |
| Q216 | E-35 |
| Q217 | F-7 |
| Q219 | E-38 |
| Q222 | I-8 |
| Q223 | I-8 |
| Q224 | H-9 |
| Q225 | G-8 |
| Q226 | G-34 |
| Q227 | G-34 |
| Q228 | H-32 |
| Q229 | I-8 |
| Q230 | H-33 |
| Q231 | H-34 |
| Q232 | G-35 |
| Q233 | I-6 |
| Q235 | F-38 |
| Q236 | G-38 |
| Q241 | G-37 |
| Q242 | E-36 |
| Q243 | C-37 |
| Q244 | E-38 |
| Q245 | D-38 |
| Q250 | H-32 |
| Q251 | H-9 |
| Q252 | G-6 |
| Q253 | F-34 |
| Q254 | G-8 |
| Q501 | B-35 |
| Q502 | B-35 |
| Q503 | B-37 |
| Q551 | I-6 |
| Q552 | I-6 |
| Q553 | I-5 |
| Q602 | A-28 |
| Q603 | G-26 |
| Q604 | B-8 |
| Q605 | A-8 |
| Q606 | B-8 |
| Q607 | A-8 |
| Q608 | B-30 |
| Q609 | G-24 |
| Q610 | F-24 |
| Q611 | G-24 |
| Q612 | F-29 |
| Q614 | F-27 |
| Q615 | D-24 |
| Q617 | B-28 |
| Q618 | E-15 |
| Q619 | B-28 |
| Q620 | G-24 |
| Q621 | A-32 |
| Q622 | C-30 |
| Q623 | B-32 |
| Q624 | A-32 |
| Q625 | B-32 |
| Q626 | G-23 |
| Q627 | H-23 |
| Q628 | G-23 |
| Q629 | F-28 |
| Q630 | G-27 |
| Q631 | G-27 |
| Q632 | F-25 |
| Q633 | E-25 |
| Q634 | G-29 |
| Q635 | F-24 |
| Q638 | C-32 |
| Q639 | C-30 |
| Q641 | A-27 |
| Q642 | F-27 |
| Q644 | G-24 |
| Q645 | E-15 |
| Q646 | G-24 |
| Q647 | G-24 |
| Q648 | B-29 |
| Q801 | F-30 |
| Q802 | G-31 |
| Q803 | F-31 |
| Q804 | F-31 |
| Q806 | E-10 |
| Q807 | E-11 |
| Q809 | E-8 |
| Q810 | E-8 |
| Q811 | H-29 |
| Q812 | I-29 |
| Q816 | G-31 |
| Q817 | G-31 |
| Q818 | I-29 |
| Q819 | H-11 |
| Q820 | G-30 |
| Q822 | I-28 |
| Q824 | H-31 |
| Q825 | G-31 |
| Q826 | G-11 |
| Q827 | I-27 |
| Q828 | I-28 |
| Q830 | D-31 |
| RV201 | F-3 |
| RV202 | G-6 |
| RV203 | G-5 |
| RV204 | G-4 |
| RV205 | G-4 |
| RV206 | H-4 |
| RV207 | G-5 |
| RV208 | I-7 |
| RV209 | F-4 |
| RV552 | I-7 |
| RV801 | H-14 |




CHECK POINT ARRAY (A)
IC602 (MX-7)
IC601 (DT-73)
IC606
IC807
IC808
CN802
CN803
1-629-371-
15
11
12
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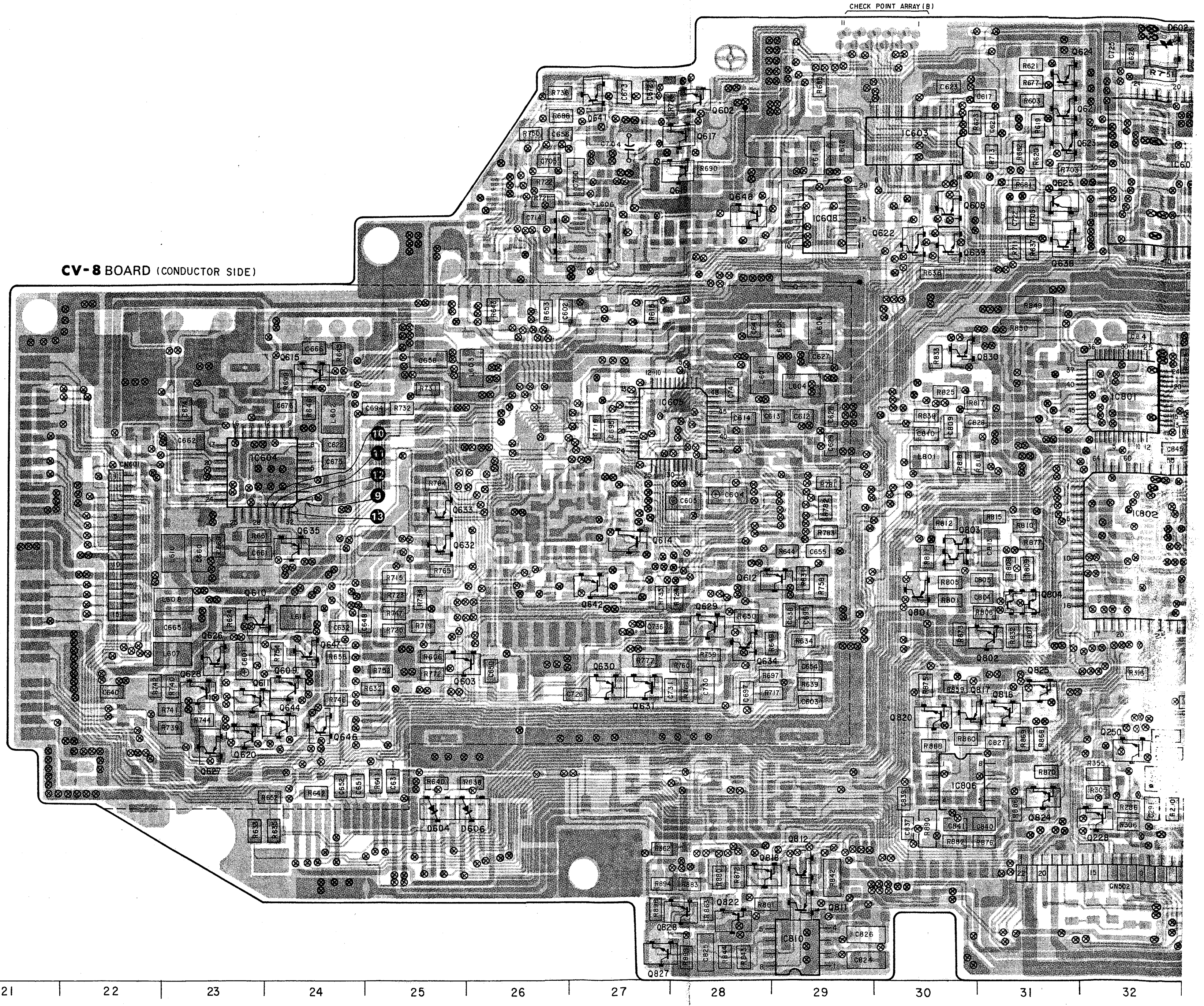
**CV-8** BOARD (CONDUCTOR SIDE)


CHECK POINT ARRAY (B)
IC603
IC604
IC605
IC608
IC801
IC802
IC806
IC810
CN352
21
22
23
24
25
26
27
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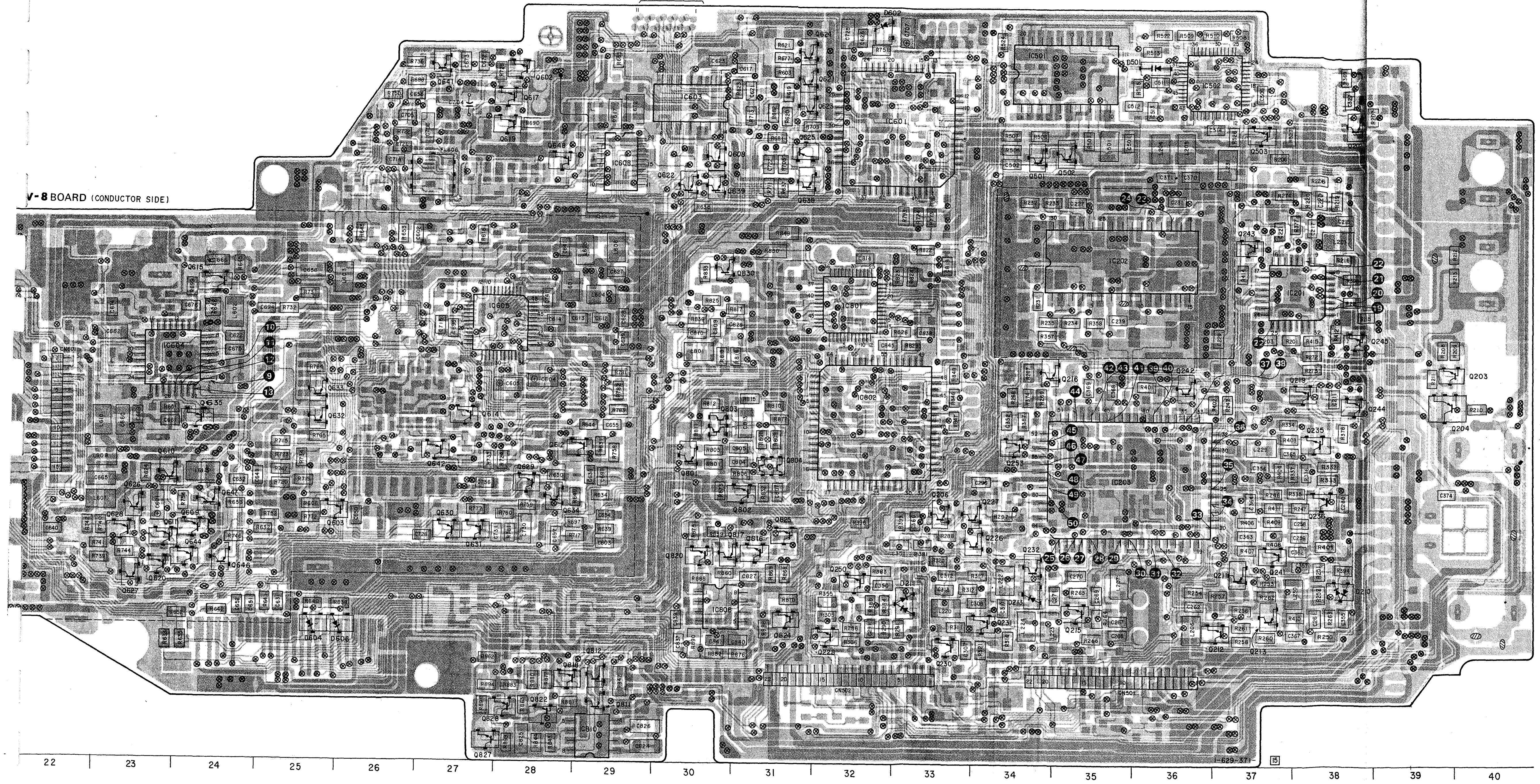
32

V-8 BOARD (CONDUCTOR SIDE)


CHECK POINT ARRAY (B)
IC601
IC602
IC603
IC605
IC608
IC501
IC502
IC201
IC202
IC203
IC801
IC802
IC806
CN502
CN501
D602
D501
Q203
Q204
C374
1-629-371
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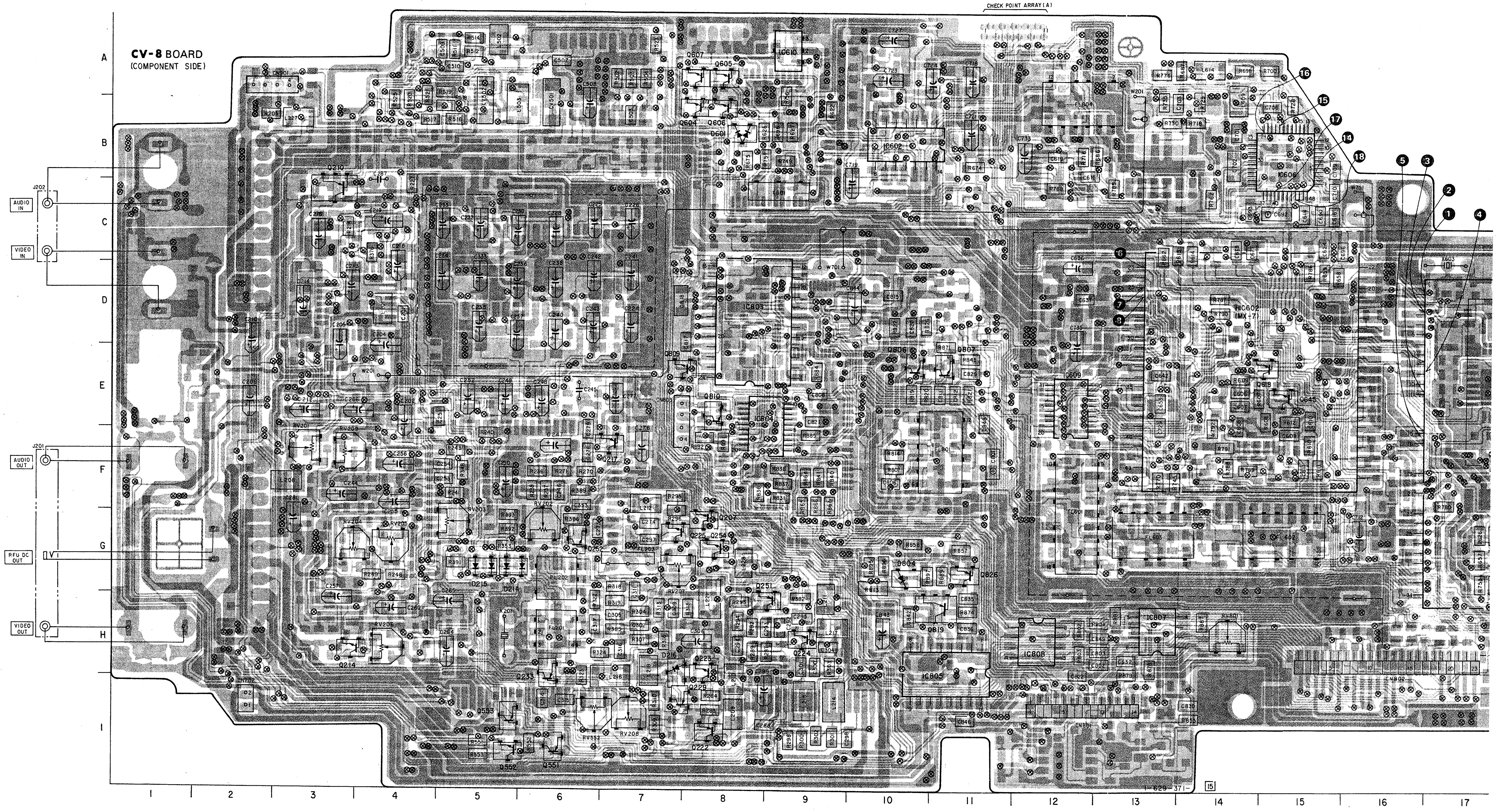
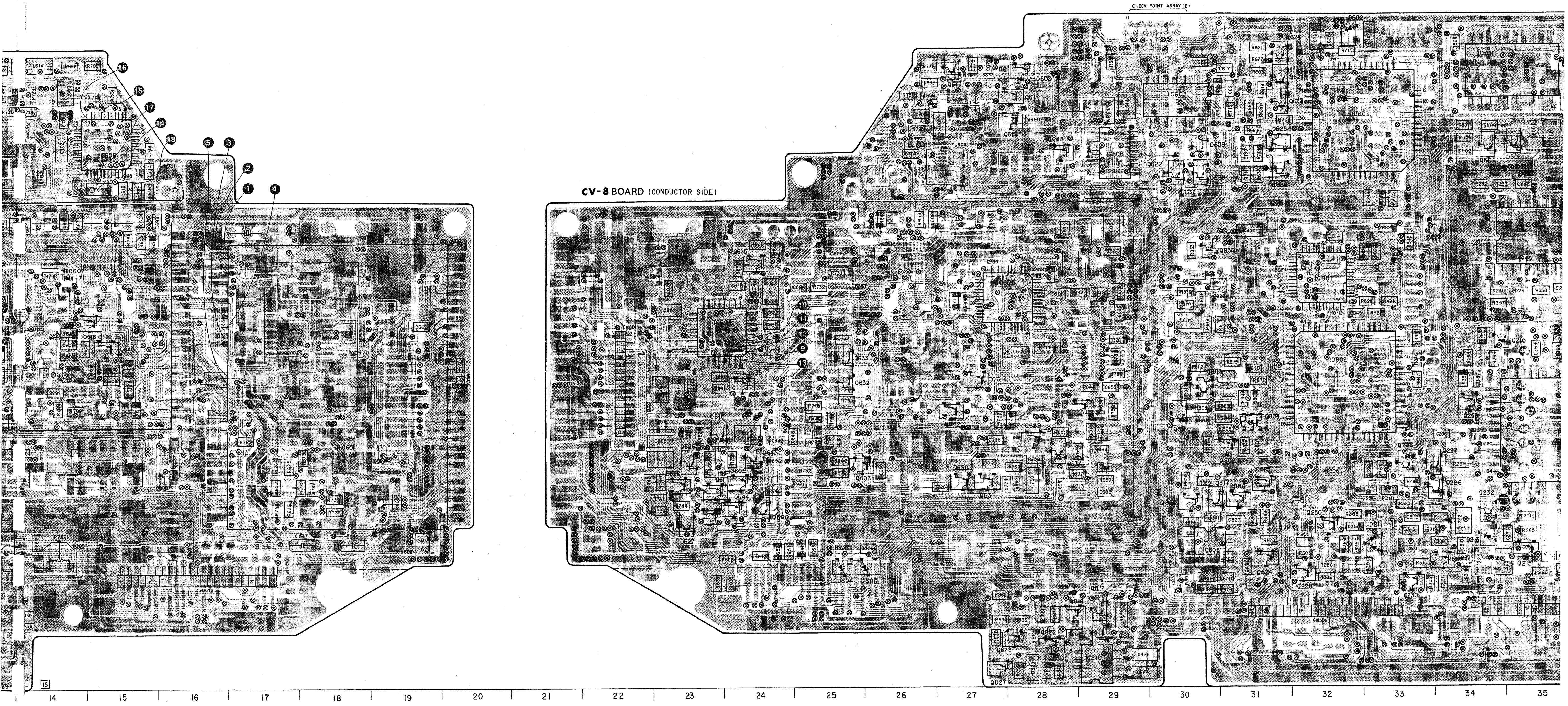
## CV-8 (CAMERA, VIDEO PROCESS) PRINTED WIRING BOARDS

— Ref. No. CV-8 BOARD : 2000 series —

CV-8 BOARD

| | |
|---|---|
| CN501 | I-36 |
| CN502 | I-32 |
| CN601 | E-22 |
| CN602 | H-20 |
| CN801 | I-12 |
| CN802 | H-16 |
| CN803 | E-7 |
| CN901 | A-3 |
| CV501 | B-6 |
| CV502 | B-5 |
| D210 | H-38 |
| D211 | H-33 |
| D213 | H-34 |
| D214 | G-6 |
| D215 | G-5 |
| D216 | I-8 |
| D501 | A-36 |
| D601 | B-8 |
| D602 | A-33 |
| D604 | H-25 |
| D606 | H-26 |
| D804 | G-10 |
| IC201 | D-38 |
| IC202 | D-35 |
| IC203 | F-36 |
| IC501 | A-35 |
| IC502 | A-37 |
| IC601 | B-33 |
| IC602 | B-10 |
| IC603 | B-30 |
| IC604 | E-24 |
| IC605 | D-27 |
| IC606 | B-15 |
| IC608 | B-29 |
| IC609 | E-12 |
| IC610 | A-9 |
| IC801 | D-32 |
| IC802 | F-32 |
| IC803 | D-8 |
| IC804 | E-9 |
| IC805 | I-11 |
| IC806 | H-31 |
| IC807 | H-14 |
| IC809 | D-10 |
| IC810 | I-29 |
| Q202 | B-38 |
| Q203 | E-40 |
| Q204 | E-40 |
| Q206 | G-35 |
| Q207 | G-8 |
| Q210 | C-3 |
| Q211 | H-37 |
| Q212 | H-37 |
| Q213 | H-37 |
| Q214 | H-4 |
| Q215 | H-35 |
| Q216 | E-35 |
| Q217 | F-7 |
| Q219 | E-38 |
| Q222 | I-8 |
| Q223 | I-8 |
| Q224 | H-9 |
| Q225 | G-8 |
| Q226 | G-34 |
| Q227 | G-34 |
| Q228 | H-32 |
| Q229 | I-8 |
| Q230 | H-33 |
| Q231 | H-34 |
| Q232 | G-35 |
| Q233 | I-6 |
| Q235 | F-38 |
| Q236 | G-38 |
| Q241 | G-37 |
| Q242 | E-36 |
| Q243 | C-37 |
| Q244 | E-38 |
| Q245 | D-38 |
| Q250 | H-32 |
| Q251 | H-9 |
| Q252 | G-6 |
| Q253 | F-34 |
| Q254 | G-8 |
| Q501 | B-35 |
| Q502 | B-35 |
| Q503 | B-37 |
| Q551 | I-6 |
| Q552 | I-6 |
| Q553 | I-5 |
| Q602 | A-28 |
| Q603 | G-26 |
| Q604 | B-8 |
| Q605 | A-8 |
| Q606 | B-8 |
| Q607 | A-8 |
| Q608 | B-30 |
| Q609 | G-24 |
| Q610 | F-24 |
| Q611 | G-24 |
| Q612 | F-29 |
| Q614 | F-27 |
| Q615 | D-24 |
| Q617 | B-28 |
| Q618 | E-15 |
| Q619 | B-28 |
| Q620 | G-24 |
| Q621 | A-32 |
| Q622 | C-30 |
| Q623 | B-32 |
| Q624 | A-32 |
| Q625 | B-32 |
| Q626 | G-23 |
| Q627 | H-23 |
| Q628 | G-23 |
| Q629 | F-28 |
| Q630 | G-27 |
| Q631 | G-27 |
| Q632 | F-25 |
| Q633 | E-25 |
| Q634 | G-29 |
| Q635 | F-24 |
| Q638 | C-32 |
| Q639 | C-30 |
| Q641 | A-27 |
| Q642 | F-27 |
| Q644 | G-24 |
| Q645 | E-15 |
| Q646 | G-24 |
| Q647 | G-24 |
| Q648 | B-29 |
| Q801 | F-30 |
| Q802 | G-31 |
| Q803 | F-31 |
| Q804 | F-31 |
| Q806 | E-10 |
| Q807 | E-11 |
| Q809 | E-8 |
| Q810 | E-8 |
| Q811 | H-29 |
| Q812 | I-29 |
| Q816 | G-31 |
| Q817 | G-31 |
| Q818 | I-29 |
| Q819 | H-11 |
| Q820 | G-30 |
| Q822 | I-28 |
| Q824 | H-31 |
| Q825 | G-31 |
| Q826 | G-11 |
| Q827 | I-27 |
| Q828 | I-28 |
| Q830 | D-31 |
| RV201 | F-3 |
| RV202 | G-6 |
| RV203 | G-5 |
| RV204 | G-4 |
| RV205 | G-4 |
| RV206 | H-4 |
| RV207 | G-5 |
| RV208 | I-7 |
| RV209 | F-4 |
| RV552 | I-7 |
| RV801 | H-14 |





**CV-8** BOARD (CONDUCTOR SIDE)

CHECK POINT ARRAY (B)
IC606
IC602 (MX-7)
HIC601 (DT-73)
IC604
IC605
IC603
IC608
IC601
IC501
IC801
IC802
IC806
IC810
CN802
CN502
14
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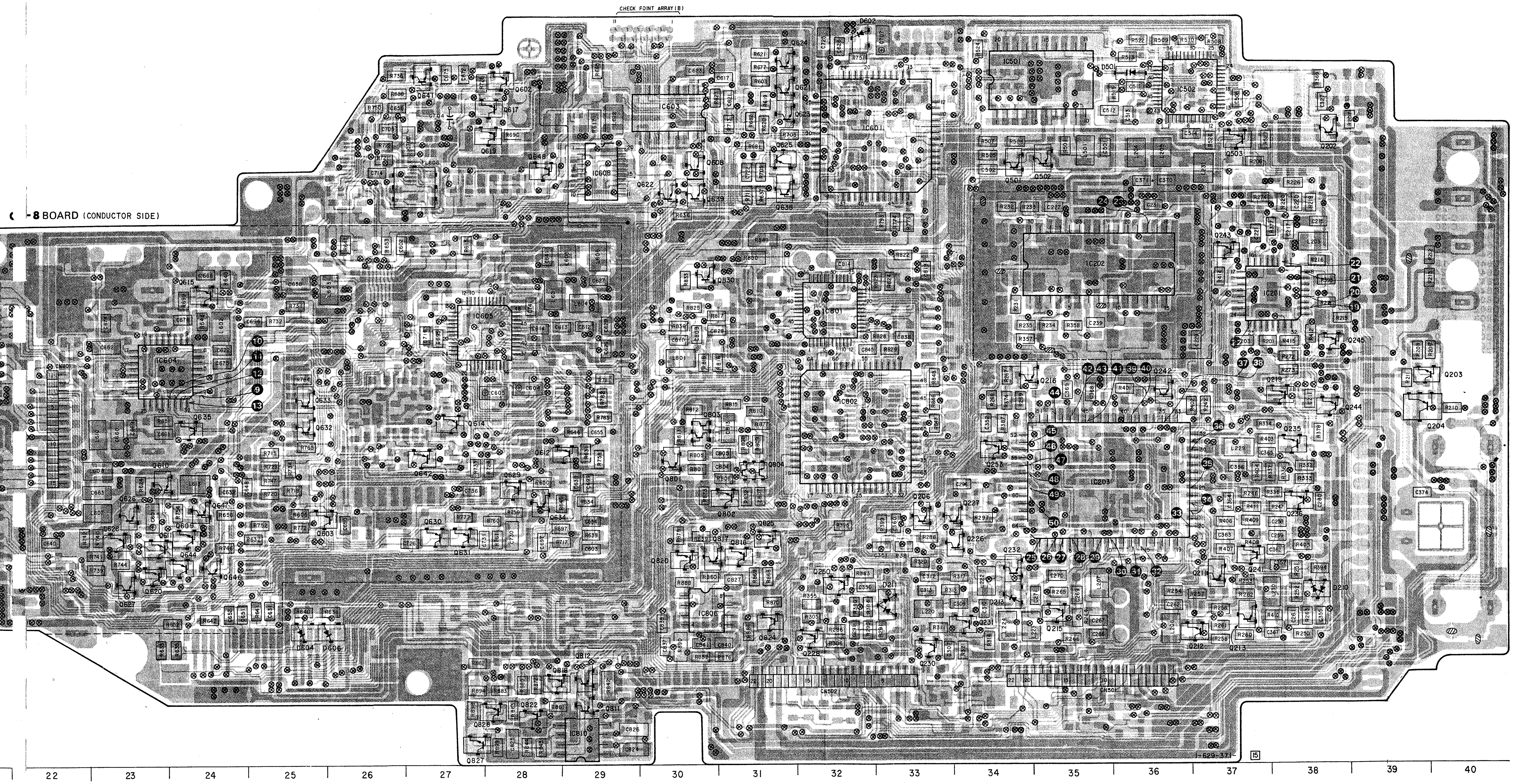
**-8 BOARD** (CONDUCTOR SIDE)


CHECK POINT ARRAY (B)
IC501
IC502
IC601
IC603
IC604
IC605
IC606
IC608
IC801
IC802
IC806
IC810
IC201
IC202
IC203
CN501
CN502
1-629-371
22
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24
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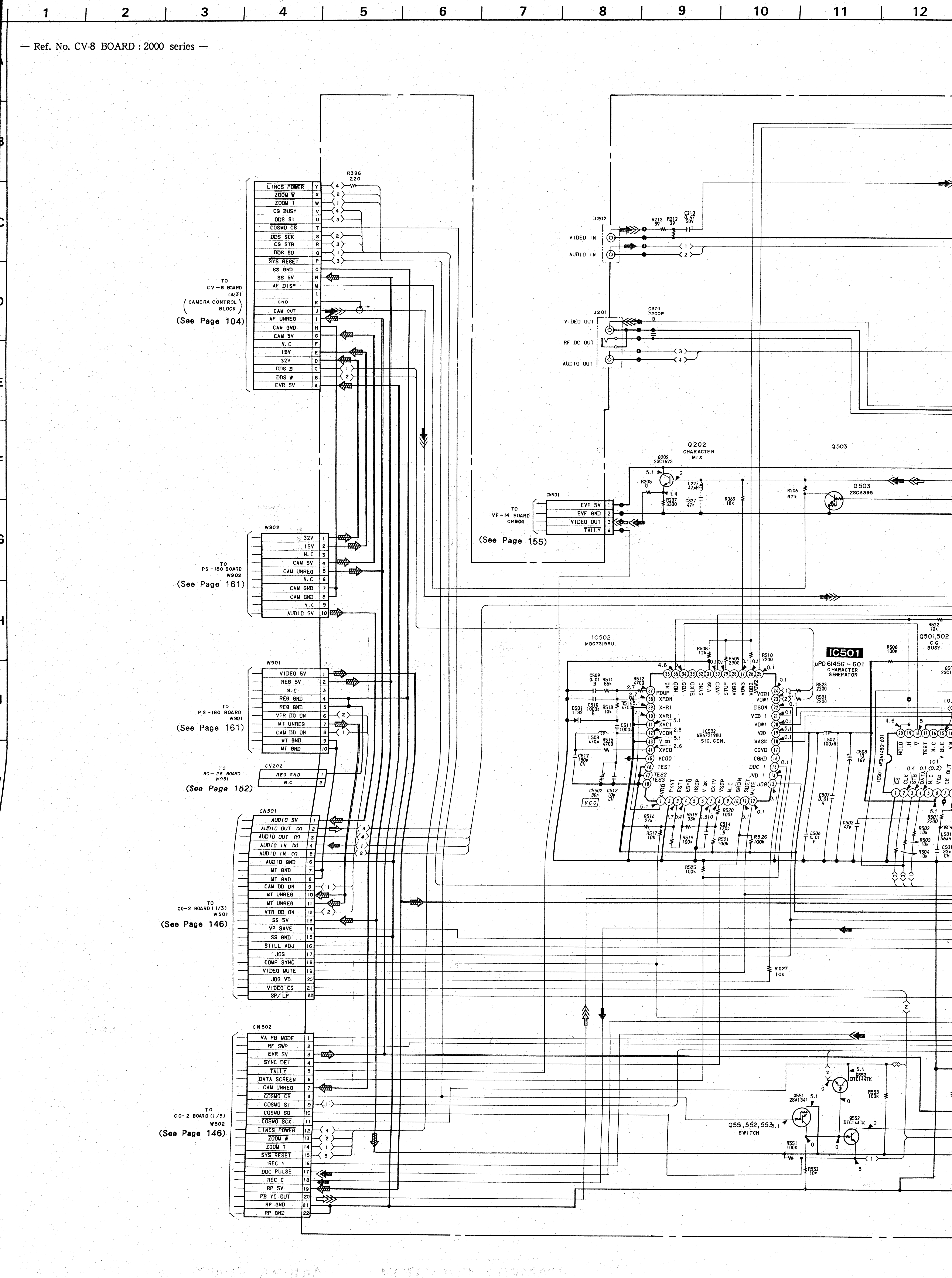
— Ref. No. CV-8 BOARD : 2000 series —


1
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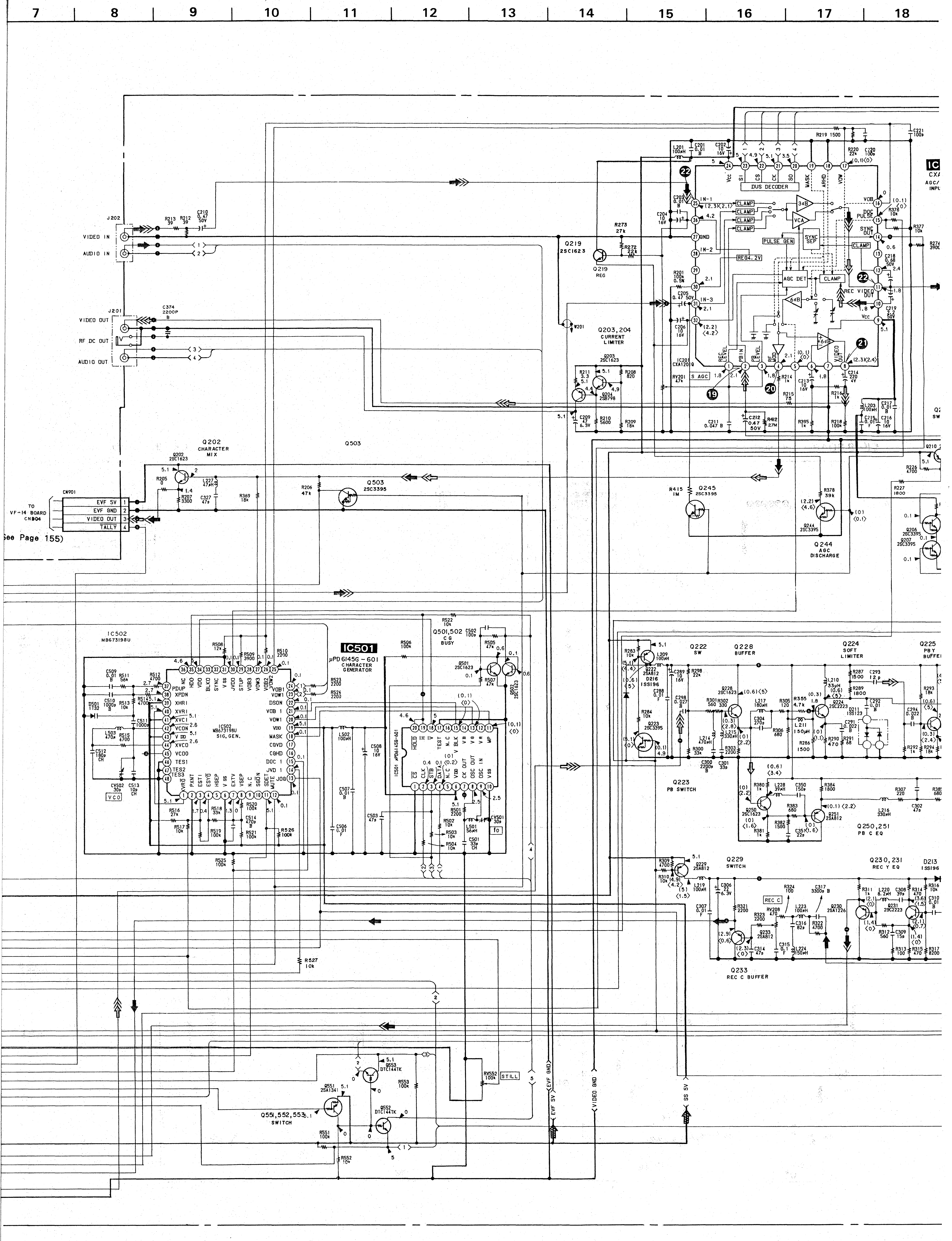
11
12
TO CV-8 BOARD (3/3) (CAMERA CONTROL BLOCK)
(See Page 104)
LINCS POWER
ZOOM W
ZOOM T
CG BUSY
DDS SI
COSMO CS
DDS SCK
CG STB
DDS SO
SYS RESET
SS GND
SS 5V
AF DISP
GND
CAM OUT
AF UNREG
CAM GND
CAM 5V
N.C
15V
32V
DDS B
DDS W
EVR 5V
R396 220
J202
VIDEO IN
AUDIO IN
R213 39
R212 39
C210 0.47 50V
J201
VIDEO OUT
RF DC OUT
AUDIO OUT
C374 2200P B
Q202 CHARACTER MIX
Q202 2SC1623
R205 0
R207 3300
L227 47μH
C327 47p
R369 18k
R206 47k
Q503
Q503 2SC3395
CN901
TO VF-14 BOARD CN904
(See Page 155)
EVF 5V
EVF GND
VIDEO OUT
TALLY
W902
TO PS-180 BOARD W902
(See Page 161)
CAM UNREG
AUDIO 5V
W901
TO PS-180 BOARD W901
(See Page 161)
VIDEO 5V
REG 5V
REG GND
VTR DD ON
MT UNREG
CAM DD ON
MT GND
CN202
TO RC-26 BOARD W951
(See Page 152)
IC502 MB673198U
IC502 MB673198U SIG. GEN.
IC501
μPD6145G-601 CHARACTER GENERATOR
Q501,502 CG BUSY
R506 100k
R508 12k
R509 3900
R510 2200
R522 10k
R523 2200
R524 2200
C509 0.01 B
R511 56k
R512 4700
R513 10k
R514 4700
C510 1000p B
D501 1T32
C511 1000p
L503 470μH
R515 4700
C512 180p CH
CV502 30p
C513 10p CH
VCO
PDUP
XPDN
XHRI
XVRI
XVCI
VCON
V DD
XVCD
VCDO
TES1
TES2
TES3
XVRO
PXNT
ESTI
ESYO
HSEP
V SS
EXTV
VSEP
N.C
SGON
SDET
MUTE
JOG
VOB1
VOW1
DSON
VOB 1
VOW1
VDD
MASK
CGVD
CGHD
DOC 1
JVD 1
NC
HDO
VDD
BLKO
SYNC
V SS
STUP
JVDD
VOB3
VOW3
VOB2
VOW2
R516 27k
R517 10k
R518 33k
R519 100k
R520 100k
C514 470p B
R521 100k
R526 100k
R525 100k
R527 10k
L502 100μH
C508 10 16V
C507 0.01 B
C506 0.01 F
C503 47p
R501 2200
R502 10k
R503 10k
R504 10k
L501 56μH
HOLD
TEST
CS
CLK
STB
DATA
CK OUT
CN501
TO CO-2 BOARD (1/3) W501
(See Page 146)
AUDIO OUT (X)
AUDIO OUT (Y)
AUDIO IN (X)
AUDIO IN (Y)
AUDIO GND
VP SAVE
STILL ADJ
JOG
COMP SYNC
VIDEO MUTE
JOG VD
VIDEO CS
SP/LP
CN502
TO CO-2 BOARD (1/3) W502
(See Page 146)
VA PB MODE
RF SWP
EVR 5V
SYNC DET
TALLY
DATA SCREEN
COSMO SI
COSMO SO
COSMO SCK
REC Y
DOC PULSE
REC C
RP 5V
PB YC OUT
RP GND
Q551 2SA1341
Q553 DTC144TK
Q552 DTC144TK
R553 100k
R551 100k
R552 10k
Q551,552,553 SWITCH


7
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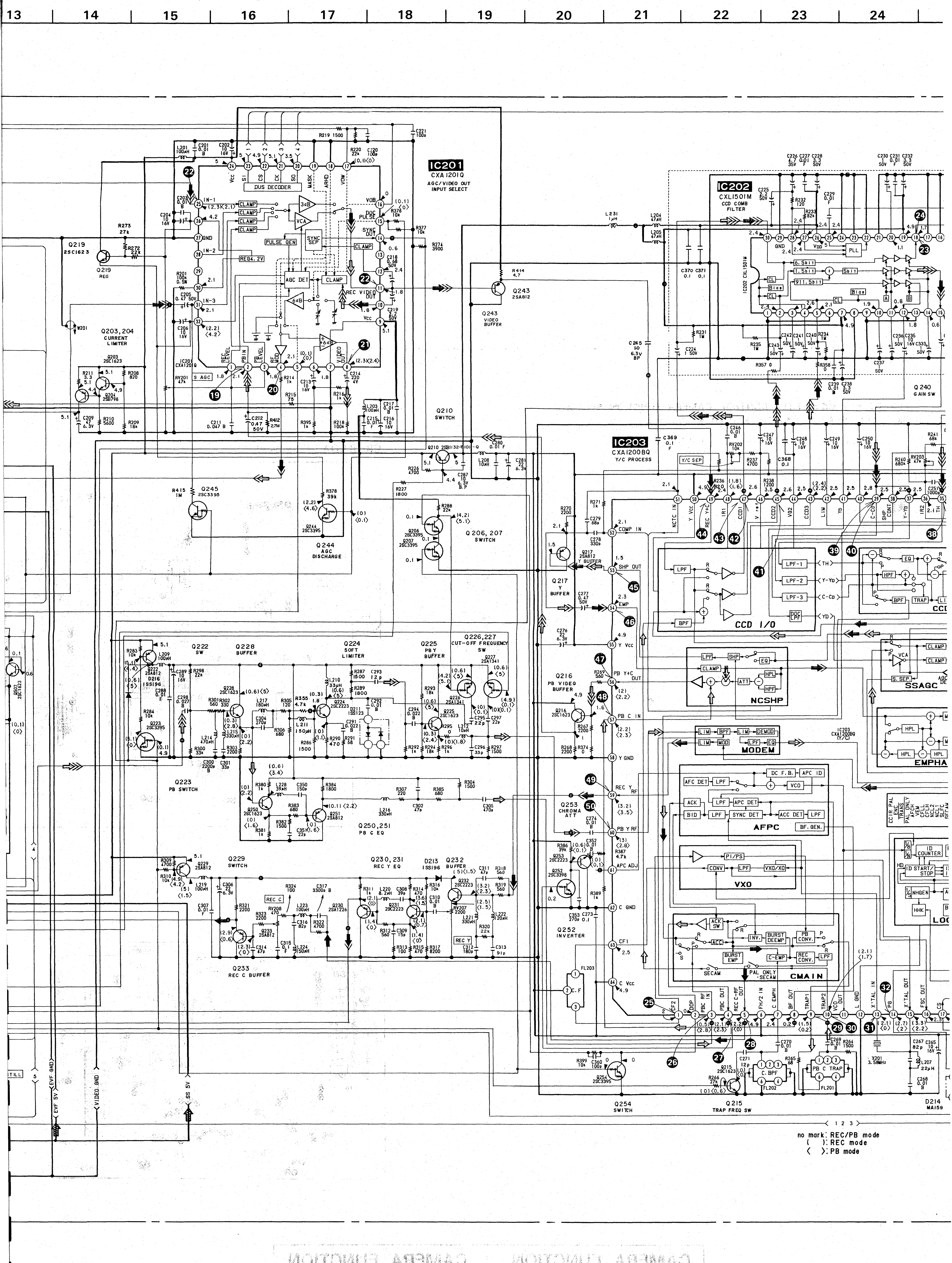
11
12
13
14
15
16
17
18
J202
VIDEO IN
AUDIO IN
J201
VIDEO OUT
RF DC OUT
AUDIO OUT
Q202
CHARACTER MIX
CN901
TO VF-14 BOARD CN904
EVF 5V
EVF GND
VIDEO OUT
TALLY
See Page 155)
Q503
2SC3395
IC502
MB673198U
SIG. GEN.
IC501
μPD6145G-601
CHARACTER GENERATOR
Q501,502
CG BUSY
VCO
STILL
Q551,552,553
SWITCH
EVF GND
EVF 5V
VIDEO GND
SS 5V
Q219
2SC1623
REG
Q203,204
CURRENT LIMITER
IC201
CXA1201Q
DUS DECODER
CLAMP
VCA
SYNC SEP
PULSE GEN
AGC DET
REG4.2V
REC VIDEO OUT
VIDEO OUT
SYNC OUT
DOC PULSE
S AGC
Q245
2SC3395
Q244
AGC DISCHARGE
Q222
SW
Q228
BUFFER
Q224
SOFT LIMITER
Q225
PB Y BUFFER
Q223
PB SWITCH
Q250,251
PB C EQ
Q229
SWITCH
Q230,231
REC Y EQ
REC C
Q233
REC C BUFFER
D213
1SS196


13
14
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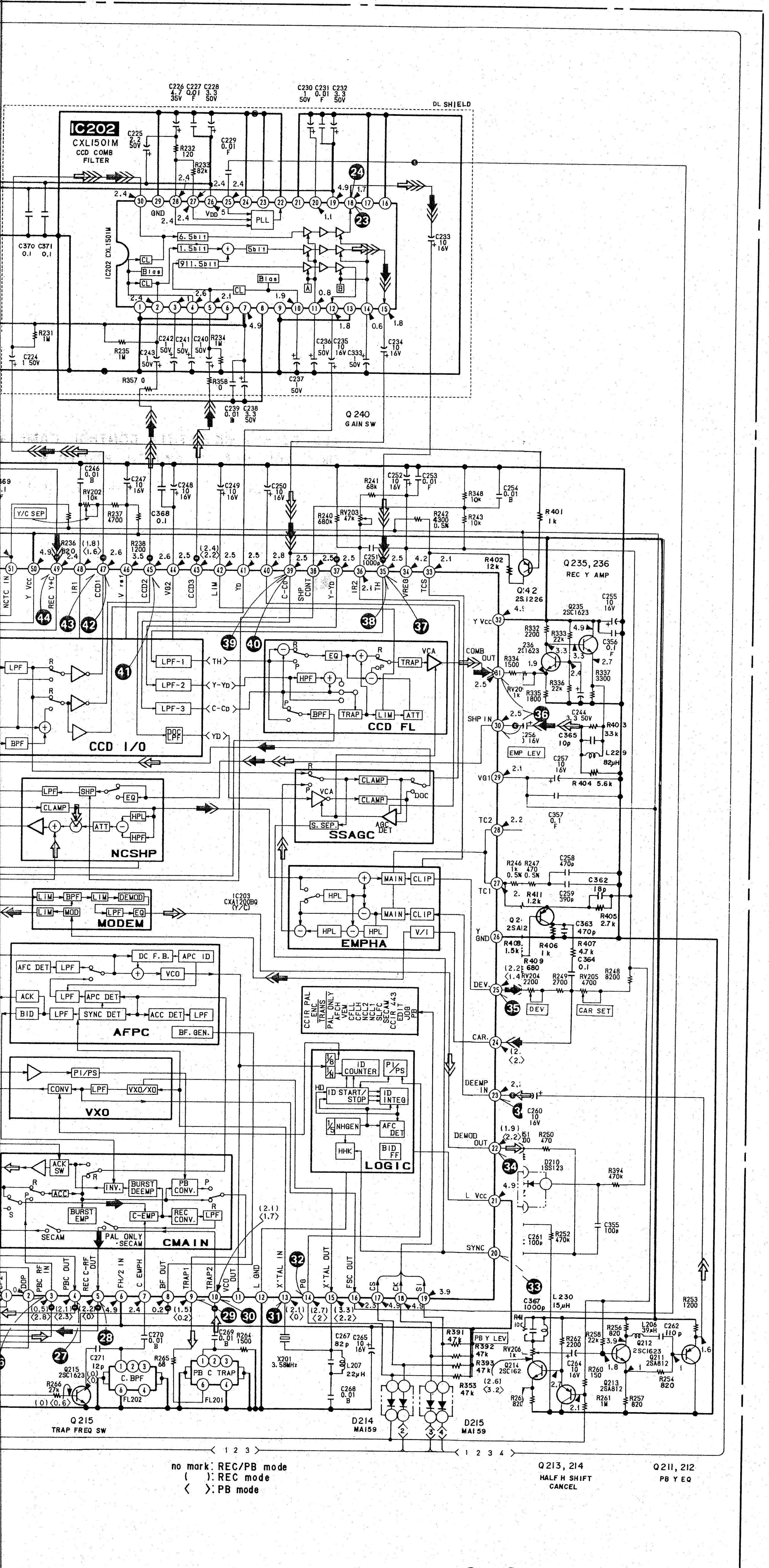
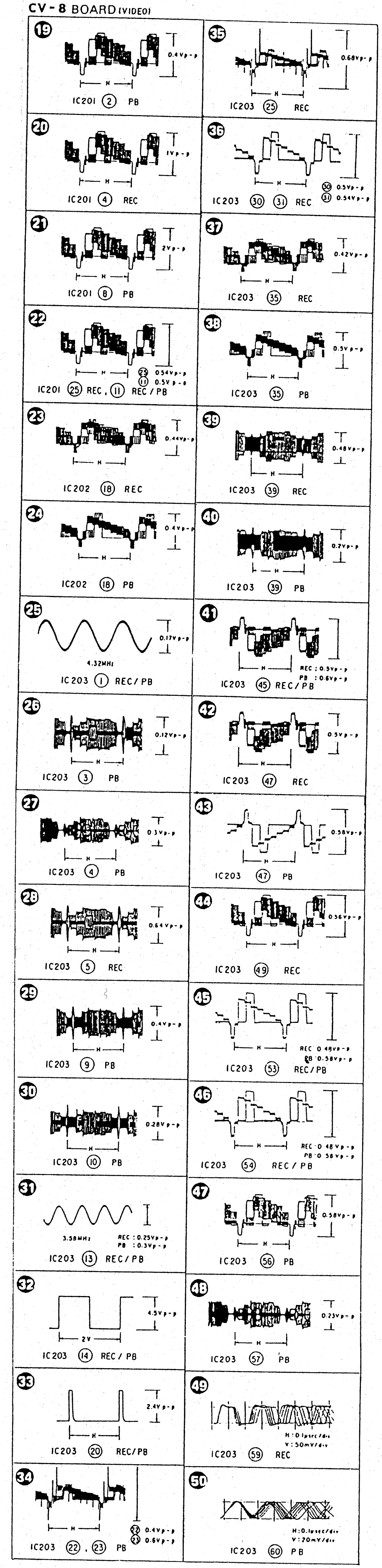
18
19
20
21
22
23
24
IC201
CXA1201Q
AGC/VIDEO OUT
INPUT SELECT
DUS DECODER
CLAMP
VCA
SYNC SEP
PULSE GEN
AGC DET
REG4.2V
REC VIDEO OUT
SYNC OUT
DOC PULSE
Q219 2SC1623 REG
Q203,204 CURRENT LIMITER
Q243 2SA812 VIDEO BUFFER
Q210 SWITCH
Q244 2SC3395 AGC DISCHARGE
Q245 2SC3395
Q206,207 SWITCH
IC202
CXL1501M
CCD COMB FILTER
PLL
Q240 GAIN SW
IC203
CXA1200BQ
Y/C PROCESS
Y/C SEP
CCD I/O
NCSHP
SSAGC
MODEM
AFPC
VXO
CMAIN
EMPHA
Q217 Y BUFFER
Q216 PB VIDEO BUFFER
Q253 CHROMA ATT
Q252 INVERTER
Q222 SW
Q228 BUFFER
Q224 SOFT LIMITER
Q225 PB Y BUFFER
Q226,227 CUT-OFF FREQUENCY SW
Q223 PB SWITCH
Q250,251 PB C EQ
Q229 SWITCH
Q230,231 REC Y EQ
D213 1SS196
Q232 BUFFER
Q233 REC C BUFFER
Q254 SWITCH
Q215 TRAP FREQ SW
C.BPF
PB C TRAP
X201 3.58MHz
D214 MA159
EVF 5V
EVF GND
VIDEO GND
SS 5V
STILL
no mark: REC/PB mode
( ): REC mode
〈 〉: PB mode


DL SHIELD
IC202
CXL1501M
CCD COMB FILTER
PLL
Q 240
GAIN SW
Q235, 236
REC Y AMP
CCD I/O
CCD FL
NCSHP
SSAGC
MODEM
EMPHA
AFPC
VXO
LOGIC
CMAIN
IC203
CXA1200BQ
(Y/C)
Q215
TRAP FREQ SW
D214
MA159
D215
MA159
Q213, 214
HALF H SHIFT
CANCEL
Q211, 212
PB Y EQ

no mark: REC/PB mode
( ): REC mode
〈 〉: PB mode

CV-8 BOARD (1/3) (VIDEO BLOCK)

CV-8 BOARD (VIDEO)



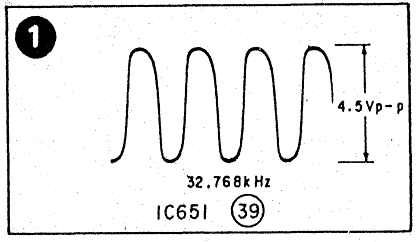
- Signal path

|  | VIDEO Signal |  |  | AUDIO Signal |
|---|---|---|---|---|
|  | CHROMA | Y | Y/CHROMA |  |
| REC | ➡ | ➡➡ | ➡➡➡ | ➡ |
| PB | ⇨ | ⇨⇨ | ⇨⇨⇨ | ⇨ |

## LI-5 (RELAY), CK-8 (TITLE CONTROL, CAMERA FUNCTION SWITCH), DK-2 (EDIT SEARCH SWITCH) PRINTED WIRING BOARDS

— Ref. No. LI-5 BOARD : 3000 series, CK-8 BOARD : 4000 series, DK-2 BOARD : 5000 series —

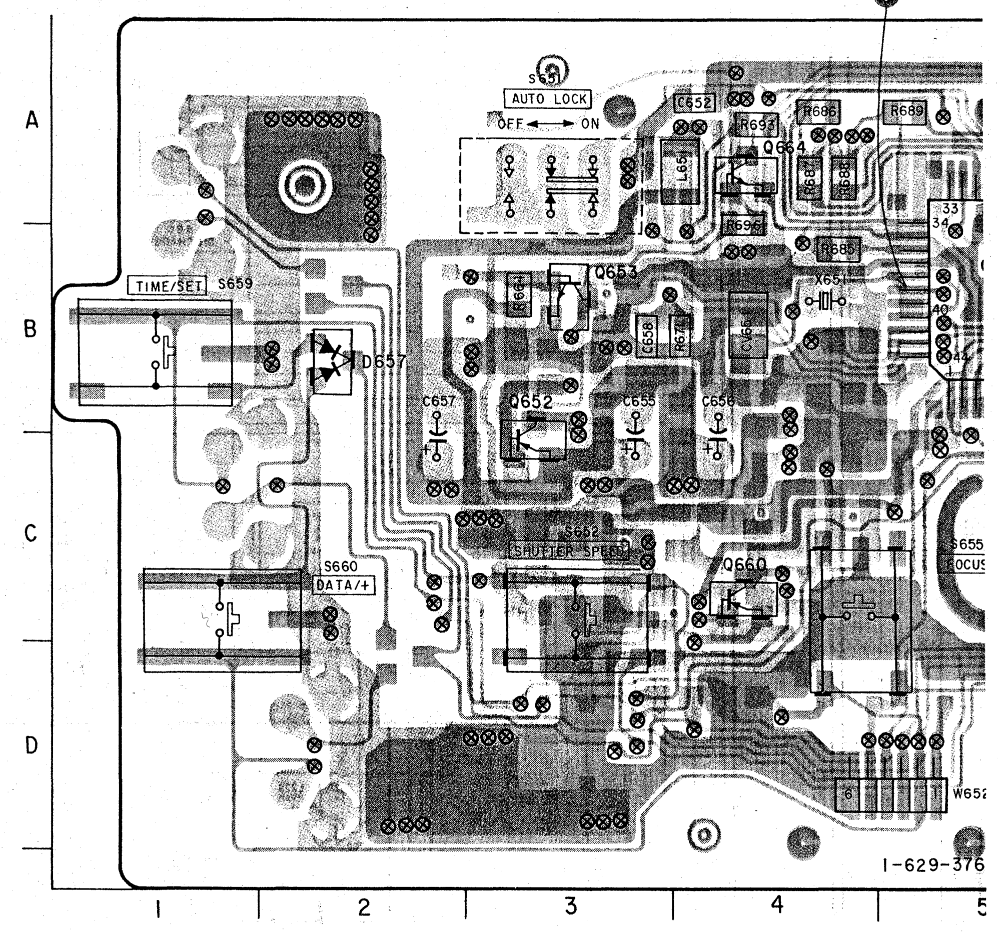
### CK-8 BOARD



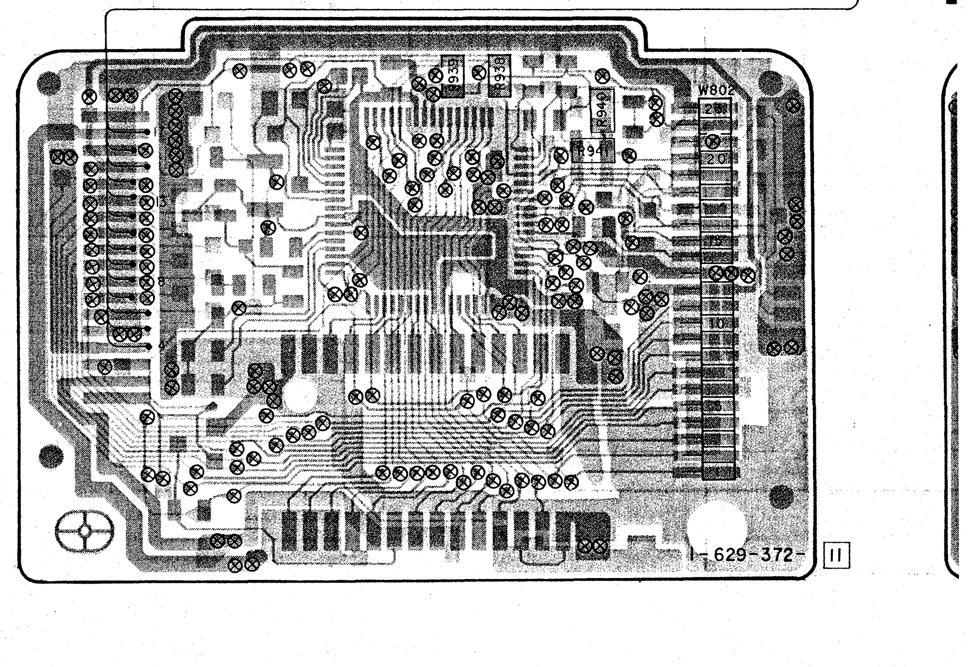
CK-8 BOARD

| | |
|---|---|
| CV651 | B-4 |
| D651 | B-12 |
| D652 | C-11 |
| D653 | C-8 |
| D654 | C-6 |
| D657 | B-2 |
| D658 | B-6 |
| IC651 | B-5 |
| Q651 | A-9 |
| Q652 | B-3 |
| Q653 | B-3 |
| Q654 | C-12 |
| Q655 | B-9 |
| Q656 | B-11 |
| Q657 | B-11 |
| Q658 | C-12 |
| Q659 | C-10 |
| Q660 | C-4 |
| Q661 | C-11 |
| Q662 | A-10 |
| Q663 | A-9 |
| Q664 | A-4 |
| RV651 | B-6 |
| W652 | D-5 |

**CK-8** BOARD (COMPONENT SIDE)


❶
A
B
C
D
1
2
3
4
5
S651
AUTO LOCK
OFF ON
C652
R693
R686
R689
Q664
L651
R687
R688
R696
R685
33
34
40
44
TIME/SET
S659
Q653
R664
X651
D657
C658
R671
CV651
C657
Q652
C655
C656
S652
SHUTTER SPEED
S655
FOCUS
S660
DATA/+
Q660
6
1
W652
1-629-376

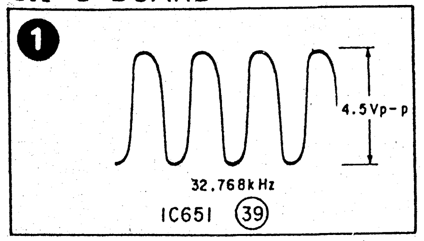
**LI-5** BOARD (COMPONENT SIDE)


R939
R938
R940
R941
W802
28
20
15
10
5
1
13
8
4
1-629-372-
11

## LI-5 (RELAY), CK-8 (TITLE CONTROL, CAMERA FUNCTION SWITCH), DK-2 (EDIT SEARCH SWITCH) PRINTED WIRING BOARDS

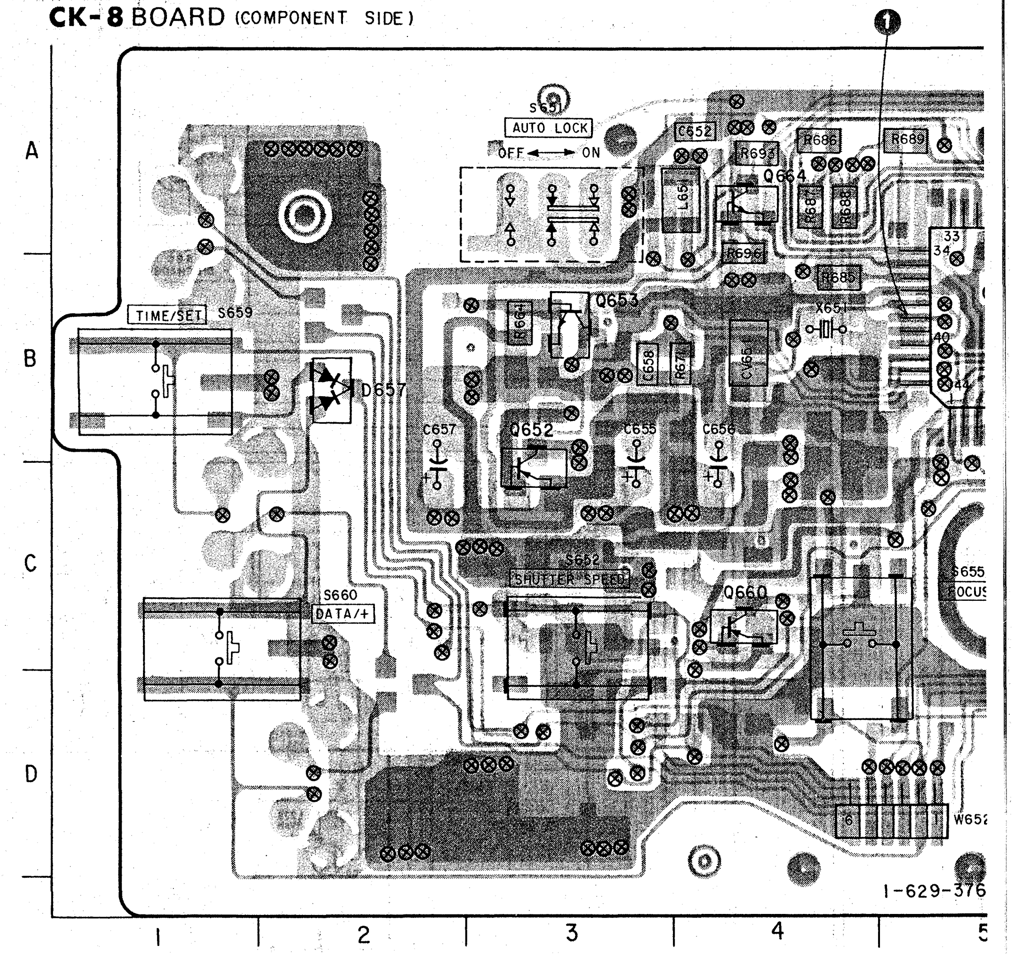
— Ref. No. LI-5 BOARD : 3000 series, CK-8 BOARD : 4000 series, DK-2 BOARD : 5000 series —

### **CK- 8** BOARD

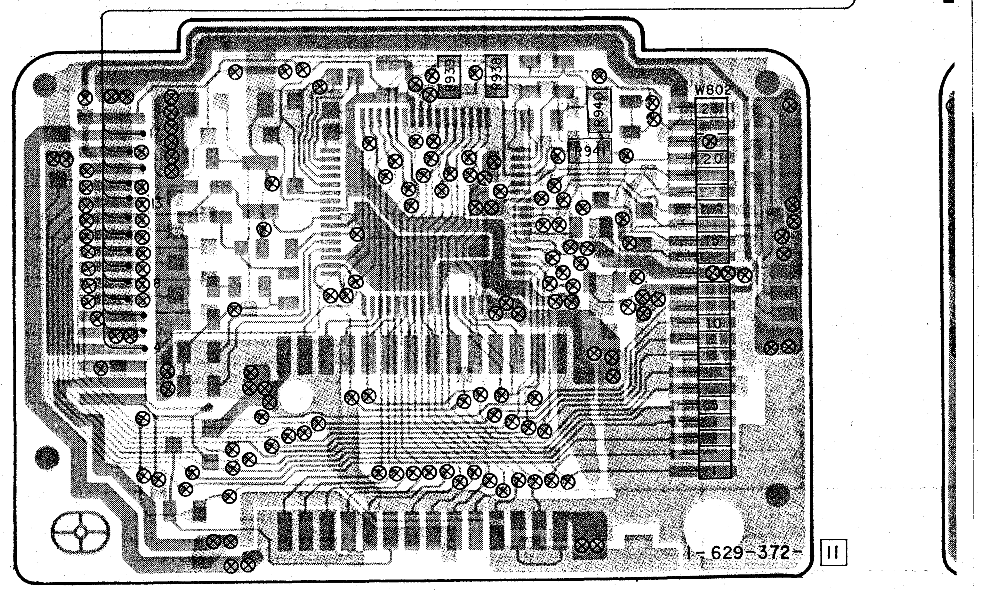


| CK-8 BOARD | |
|---|---|
| CV651 | B-4 |
| D651 | B-12 |
| D652 | C-11 |
| D653 | C-8 |
| D654 | C-6 |
| D657 | B-2 |
| D658 | B-6 |
| IC651 | B-5 |
| Q651 | A-9 |
| Q652 | B-3 |
| Q653 | B-3 |
| Q654 | C-12 |
| Q655 | B-9 |
| Q656 | B-11 |
| Q657 | B-11 |
| Q658 | C-12 |
| Q659 | C-10 |
| Q660 | C-4 |
| Q661 | C-11 |
| Q662 | A-10 |
| Q663 | A-9 |
| Q664 | A-4 |
| RV651 | B-6 |
| W652 | D-5 |

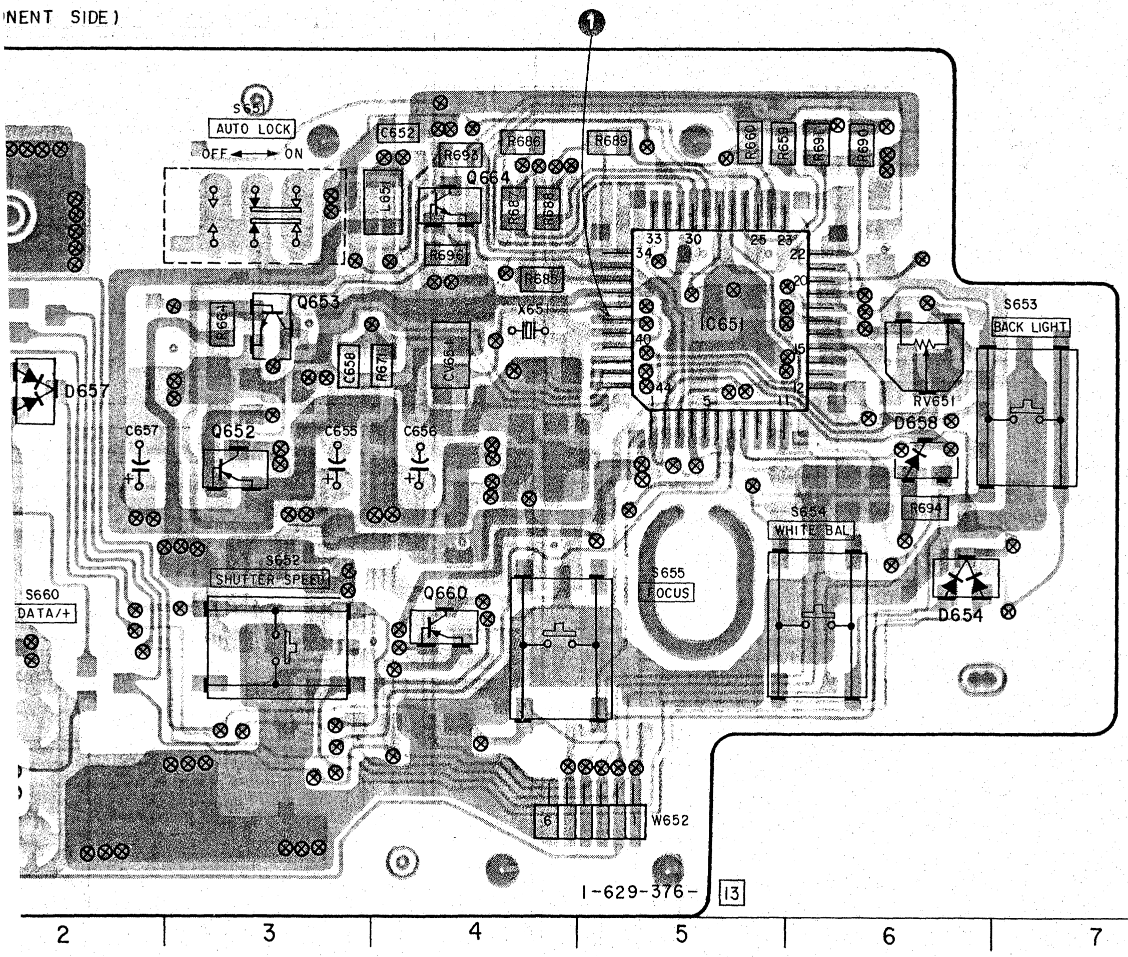
**CK- 8** BOARD (COMPONENT SIDE)


❶
A
B
C
D
1
2
3
4
5
S651
AUTO LOCK
OFF ← → ON
C652
R693
R686
R669
Q664
R696
R685
X651
TIME/SET
S659
D657
Q653
C657
Q652
C655
C656
S652
SHUTTER SPEED
S655
FOCUS
Q660
S660
DATA/+
W652
1-629-376

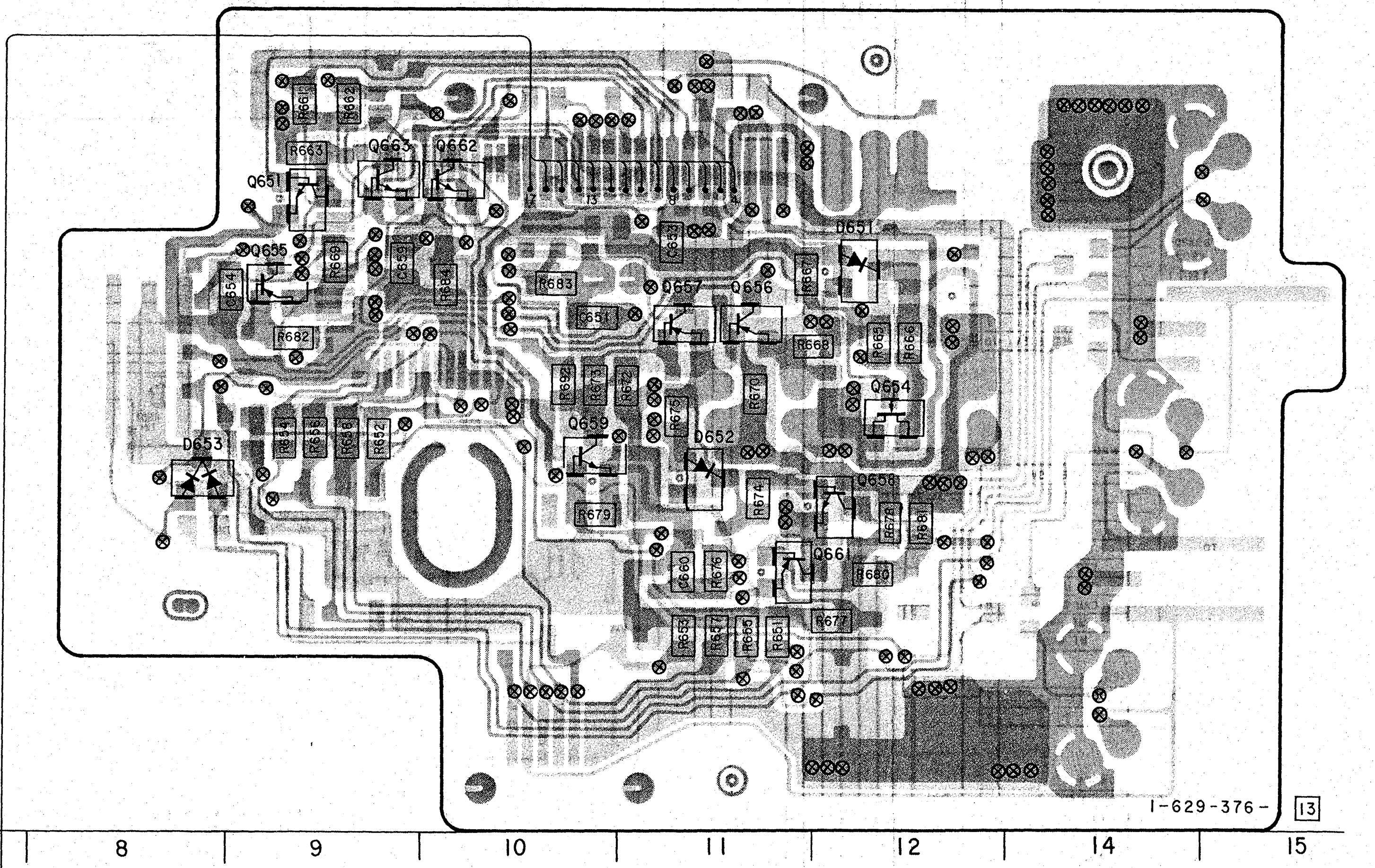
**LI - 5** BOARD (COMPONENT SIDE)


W802
1-629-372-
11

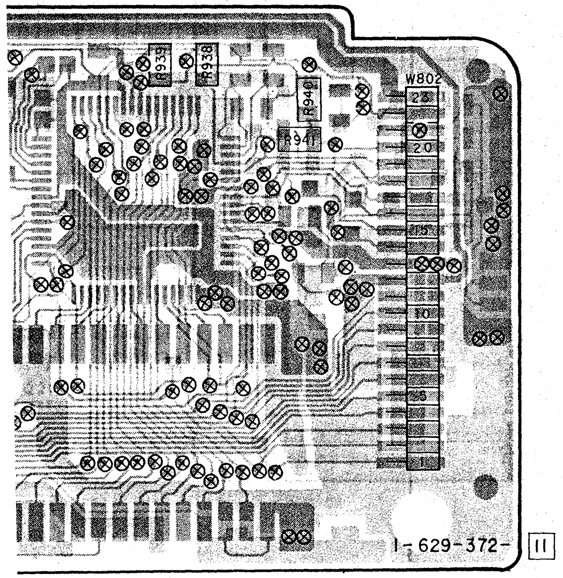
NENT SIDE)


❶
S651
AUTO LOCK
OFF ON
C652 R692 R686 R689 R660 R659 R691 R690
Q664 L651 R687 R688
R695 R685
IC651
X651
Q653 C658 R670 CV651
D657
C657 Q652 C655 C656
S653
BACK LIGHT
RV651
D656
R694
S654
WHITE BAL
S655
FOCUS
S652
SHUTTER SPEED
S660
DATA/+
Q660
D654
W652
1-629-376- 13
2 3 4 5 6 7

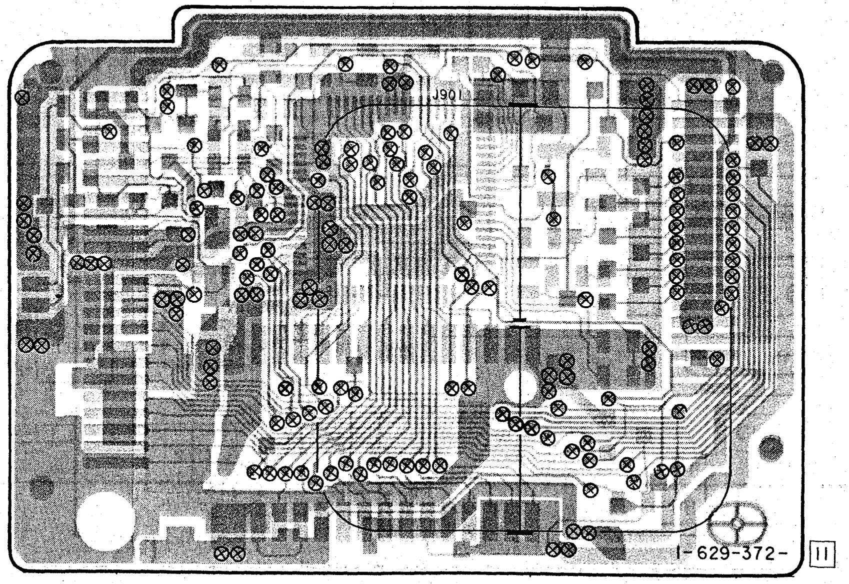
## CK-8 BOARD (CONDUCTOR SIDE)


R663 Q663 Q662 Q651
Q655 R654 R682
D651 R683 Q657 Q656
R668 Q654 Q659 D652
D653 R679 Q658 Q661
R680 R677
1-629-376- 13
8 9 10 11 12 14 15

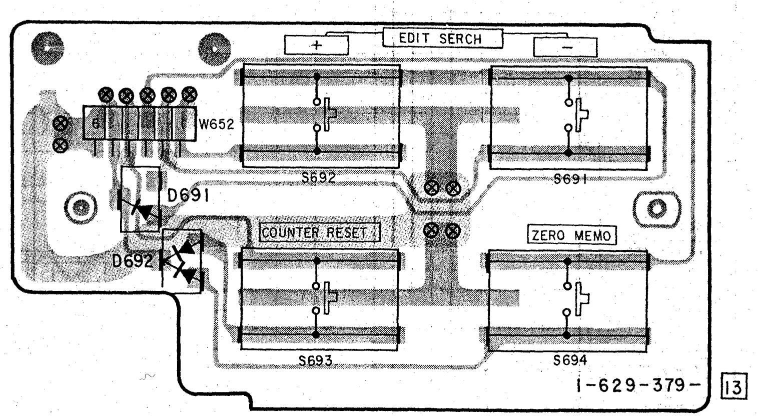
T SIDE)


W802
1-629-372- 11

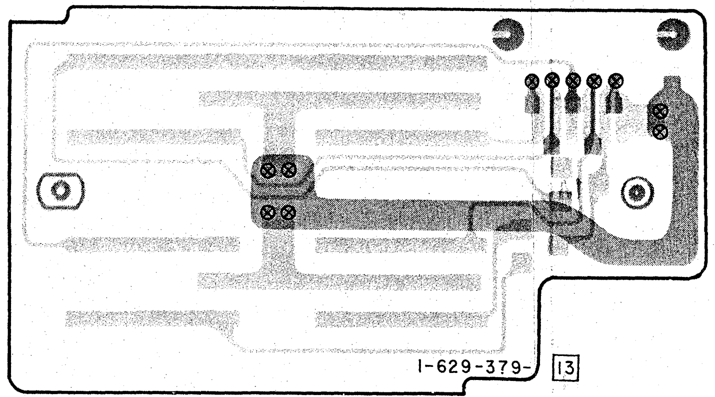
## LI-5 BOARD (CONDUCTOR SIDE)


J901
1-629-372- 11

## DK-2 BOARD (COMPONENT SIDE)

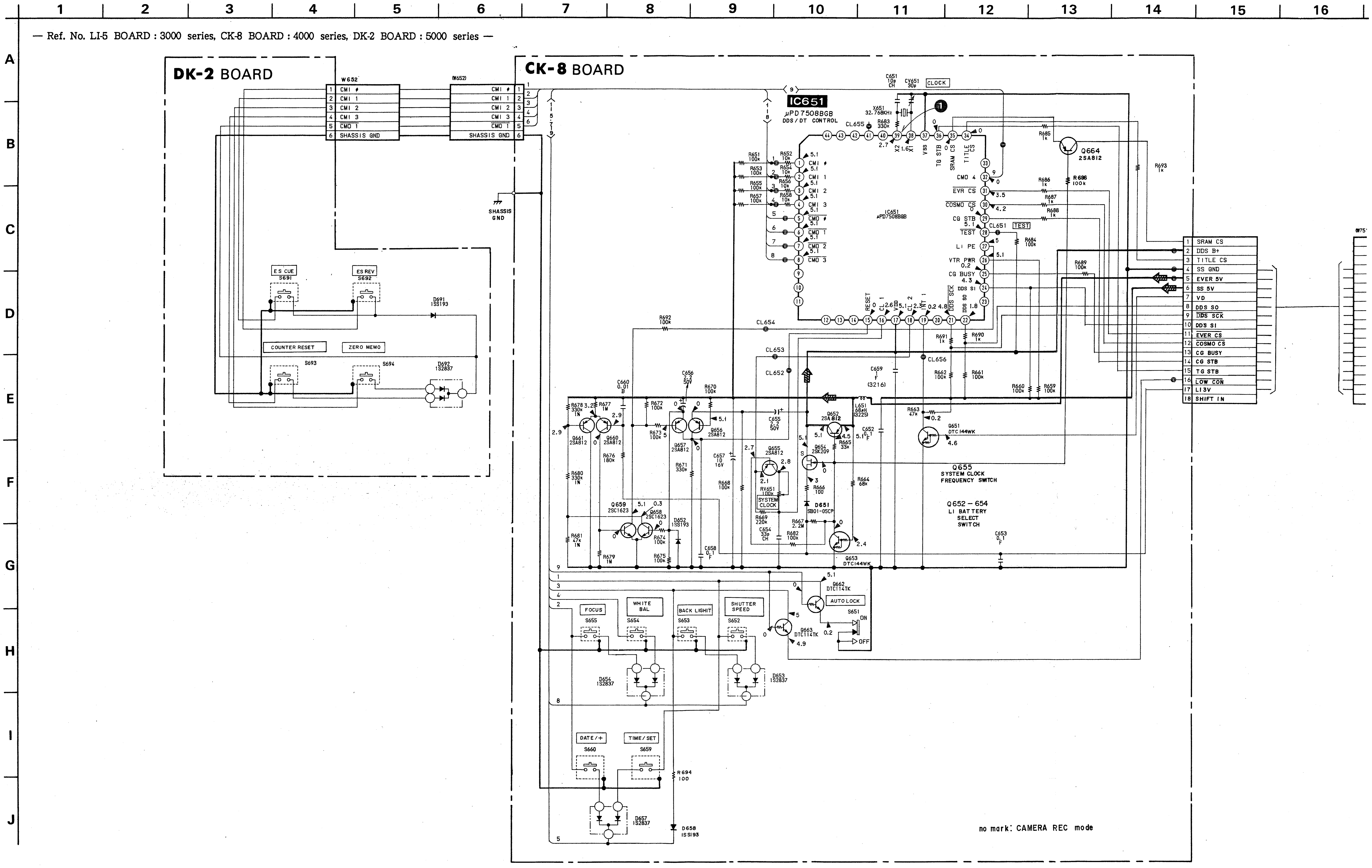

+
EDIT SERCH
−
W652
S692
S691
D691
COUNTER RESET
ZERO MEMO
D692
S693
S694
1-629-379- 13

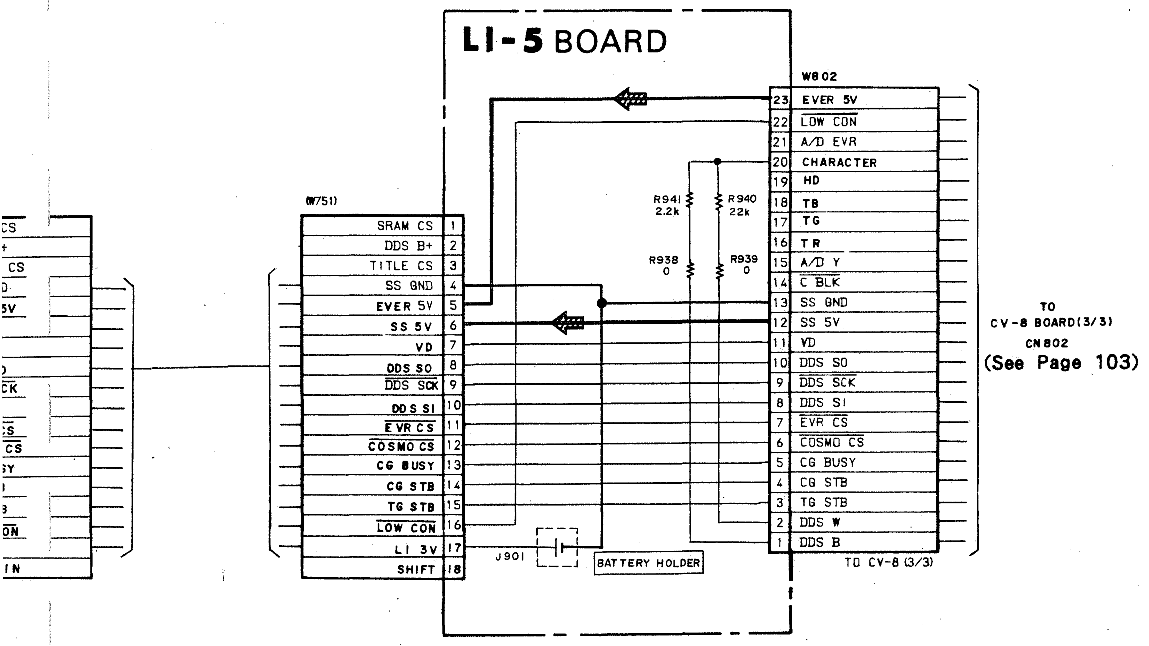
## DK-2 BOARD (CONDUCTOR SIDE)



## LI-5 (RELAY), CK-8 (TITLE CONTROL, CAMERA FUNCTION SWITCH), DK-2 (EDIT SEARCH SWITCH) SCHEMATIC DIAGRAMS

— Ref. No. LI-5 BOARD : 3000 series, CK-8 BOARD : 4000 series, DK-2 BOARD : 5000 series —


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
DK-2 BOARD
W652
CMI ∅
CMI 1
CMI 2
CMI 3
CMO 1
SHASSIS GND
SHASSIS GND
ES CUE
S691
ES REV
S692
D691
1SS193
COUNTER RESET
ZERO MEMO
S693
S694
D692
1S2837
CK-8 BOARD
IC651
μPD7508BGB
DDS/DT CONTROL
C651 10p CH
CY651 30p
CLOCK
X651 32.768KHz
R683 330k
CL655
TG STB
SRAM CS
TITLE CS
VSS
X1
X2
Q664
2SA812
R685 1k
R693 1k
R651 100k
R652 10k
R653 100k
R654 10k
R655 100k
R656 10k
R657 100k
R658 10k
CMI ∅
CMI 1
CMI 2
CMI 3
CMO ∅
CMO 1
CMO 2
CMO 3
CMO 4
EVR CS
COSMO CS
CG STB
TEST
LI PE
VTR PWR
CG BUSY
DDS SI
DDS SO
DDS SCK
RESET
CL 1
CL 2
INT 1
R686 1k
R696 100k
R687 1k
R688 1k
CL651
TEST
R684 100k
R689 100k
R691 1k
R690 1k
R692 100k
CL654
CL653
CL652
CL656
C659 1 F (3216)
R662 100k
R661 100k
R660 100k
R659 100k
SRAM CS
DDS B+
TITLE CS
SS GND
EVER 5V
SS 5V
VD
DDS SO
DDS SCK
DDS SI
EVER CS
COSMO CS
CG BUSY
CG STB
TG STB
LOW CON
LI 3V
SHIFT IN
C660 0.01 B
C656 2.2 50V
R670 100k
R678 330k 1%
R677 1M
R672 100k
Q661 2SA812
Q660 2SA812
R673 100k
Q657 2SA812
Q656 2SA812
C655 2.2 50V
L651 68μH (3225)
Q652 2SA812
R665 33k
C652 0.1 F
R663 47k
Q651 DTC144WK
R676 180k
R671 330k
C657 10 16V
Q655 2SA812
Q654 2SK209
R680 330k 1%
R668 100k
RV651 100k
SYSTEM CLOCK
R666 100
D651 SB01-05CP
R664 68k
Q655
SYSTEM CLOCK
FREQUENCY SWITCH
Q652 – 654
LI BATTERY
SELECT
SWITCH
Q659 2SC1623
Q658 2SC1623
D652 1SS193
R669 220k
C654 33p CH
R667 2.2M
R682 100k
R681 47k 1%
R674 100k
R679 1M
R675 100k
C658 0.1 F
Q653 DTC144WK
C653 0.1 F
Q662 DTC114TK
AUTO LOCK
S651
ON
OFF
Q663 DTC114TK
FOCUS
S655
WHITE BAL
S654
BACK LIGHT
S653
SHUTTER SPEED
S652
D654 1S2837
D653 1S2837
DATE/+
S660
TIME/SET
S659
R694 100
D657 1S2837
D658 1SS193
no mark: CAMERA REC mode


LI-5 BOARD
(W751)
SRAM CS 1
DDS B+ 2
TITLE CS 3
SS GND 4
EVER 5V 5
SS 5V 6
VD 7
DDS SO 8
DDS SCK 9
DDS SI 10
EVR CS 11
COSMO CS 12
CG BUSY 13
CG STB 14
TG STB 15
LOW CON 16
LI 3V 17
SHIFT 18
J901
BATTERY HOLDER
R941 2.2k
R940 22k
R938 0
R939 0
W802
23 EVER 5V
22 LOW CON
21 A/D EVR
20 CHARACTER
19 HD
18 TB
17 TG
16 TR
15 A/D Y
14 C BLK
13 SS GND
12 SS 5V
11 VD
10 DDS SO
9 DDS SCK
8 DDS SI
7 EVR CS
6 COSMO CS
5 CG BUSY
4 CG STB
3 TG STB
2 DDS W
1 DDS B
TO CV-8 (3/3)
TO
CV-8 BOARD(3/3)
CN802
(See Page 103)
CS
+
CS
D
5V
CK
S
CS
Y
ON
IN

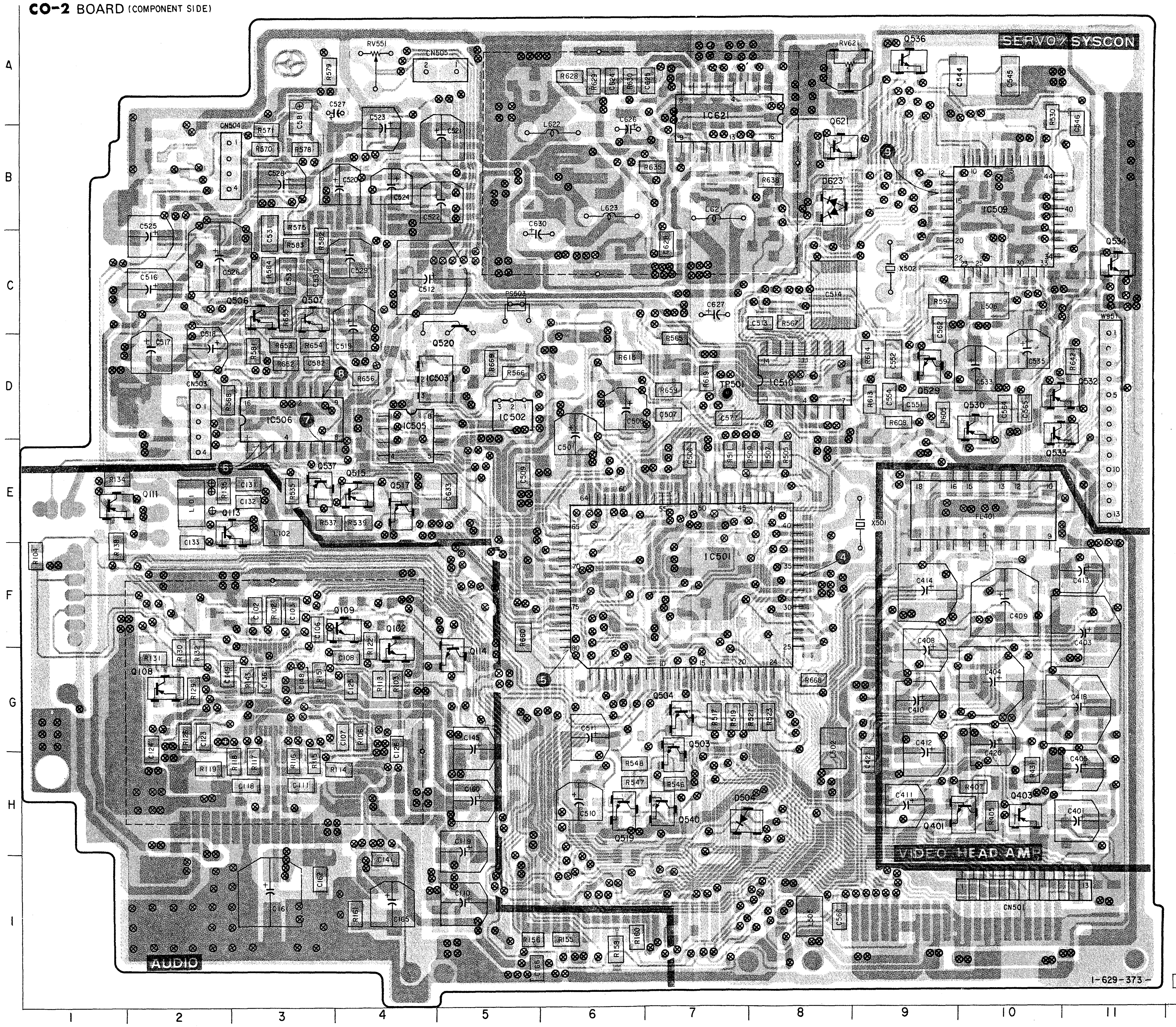
## CO-2 (HEAD AMP, AUDIO/SERVO, SYSTEM CONTROL), CC-15 (TFG/SFG AMP), KS-3 (CAPSTAN MOTOR DRIVE, JUNCTION), FP-89 (TAPE END SENSOR), FP-90 (TAPE TOP SENSOR) PRINTED WIRING BOARDS

— Ref. No. CO-2 BOARD : 6000 series —

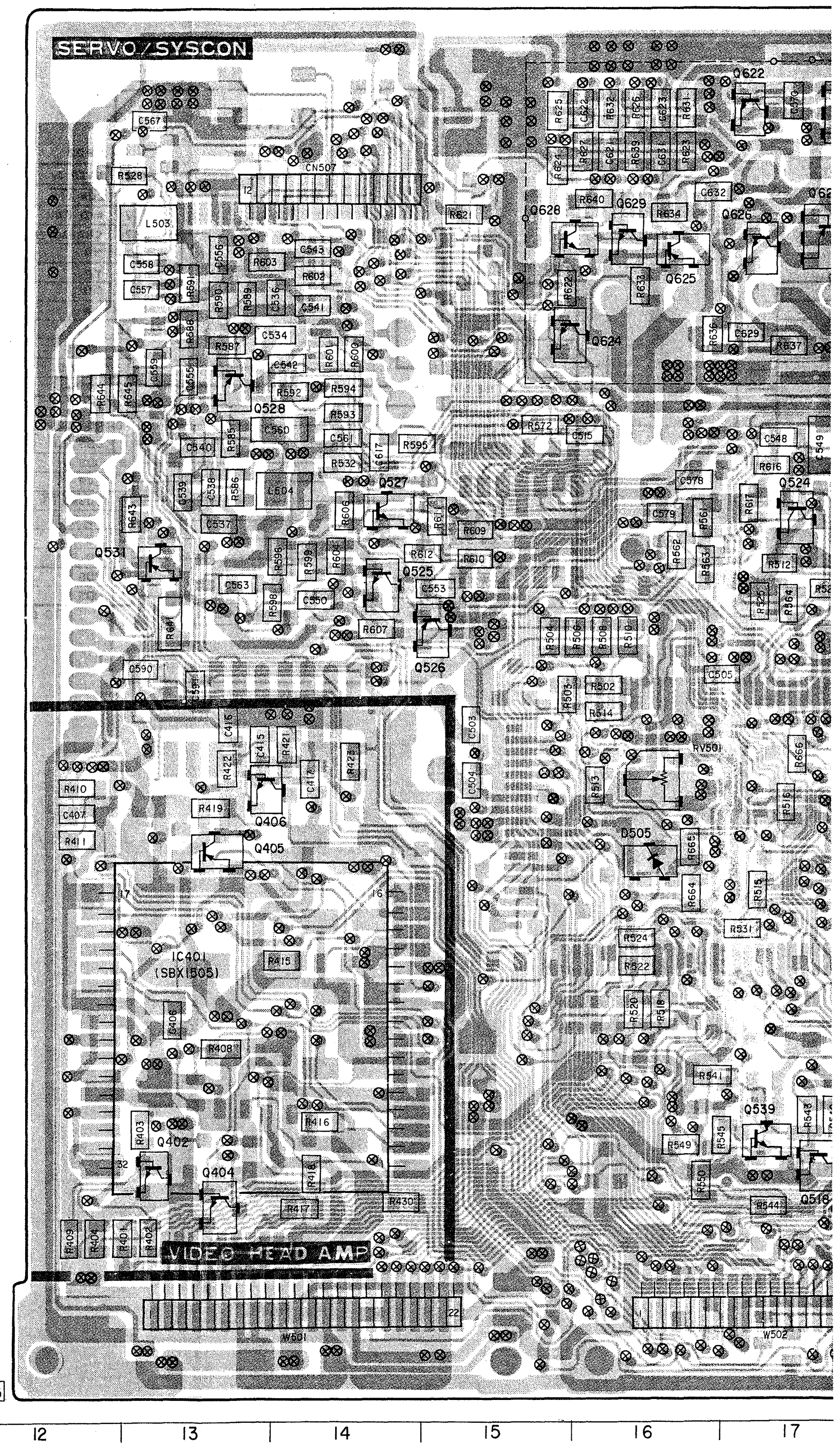
CO-2 BOARD

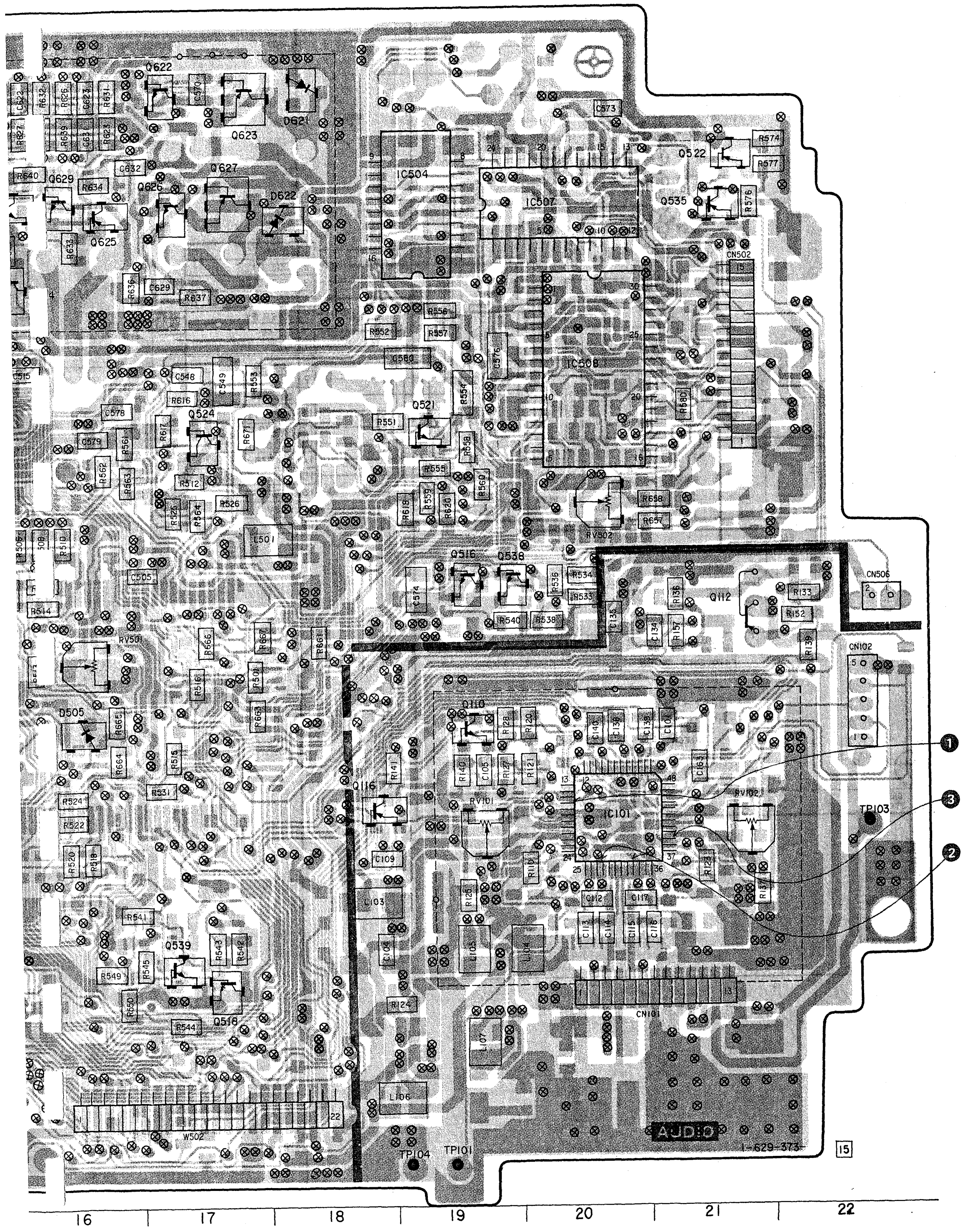
| | |
|---|---|
| CN101 | H-21 |
| CN102 | F-22 |
| CN501 | I-10 |
| CN502 | C-21 |
| CN503 | D-2 |
| CN504 | B-3 |
| CN505 | A-5 |
| CN506 | E-22 |
| CN507 | B-14 |
| D504 | H-8 |
| D505 | F-16 |
| D621 | A-18 |
| D622 | B-18 |
| D623 | B-8 |
| IC101 | G-20 |
| IC401 | G-13 |
| IC501 | F-7 |
| IC502 | D-5 |
| IC503 | D-5 |
| IC504 | B-19 |
| IC505 | D-4 |
| IC506 | D-3 |
| IC507 | B-20 |
| IC508 | C-20 |
| IC509 | B-10 |
| IC510 | D-8 |
| IC621 | A-7 |
| Q102 | F-4 |
| Q108 | G-2 |
| Q109 | F-4 |
| Q110 | F-19 |
| Q111 | E-1 |
| Q112 | E-21 |
| Q113 | E-3 |
| Q114 | G-5 |
| Q116 | G-18 |
| Q401 | H-10 |
| Q402 | H-13 |
| Q403 | H-10 |
| Q404 | H-13 |
| Q405 | F-13 |
| Q406 | F-13 |
| Q503 | H-7 |
| Q504 | G-7 |
| Q506 | C-3 |
| Q507 | C-3 |
| Q515 | E-4 |
| Q516 | E-19 |
| Q517 | E-4 |
| Q518 | H-17 |
| Q519 | H-6 |
| Q520 | C-5 |
| Q521 | D-19 |
| Q522 | B-21 |
| Q524 | D-17 |
| Q525 | D-14 |
| Q526 | E-15 |
| Q527 | D-14 |
| Q528 | C-13 |
| Q529 | D-9 |
| Q530 | D-10 |
| Q531 | D-13 |
| Q532 | D-11 |
| Q533 | D-11 |
| Q534 | C-11 |
| Q535 | B-21 |
| Q536 | A-9 |
| Q537 | E-3 |
| Q538 | E-19 |
| Q539 | H-17 |
| Q540 | H-7 |
| Q621 | B-8 |
| Q622 | A-17 |
| Q623 | A-17 |
| Q624 | C-16 |
| Q625 | B-16 |
| Q626 | B-17 |
| Q627 | B-17 |
| Q628 | B-16 |
| Q629 | B-16 |
| Q630 | E-8 |
| RV101 | G-19 |
| RV102 | G-21 |
| RV501 | F-16 |
| RV502 | D-20 |
| RV551 | A-4 |
| RV621 | A-8 |
| TP101 | I-19 |
| TP103 | G-22 |
| TP104 | I-19 |
| TP501 | D-7 |
| W501 | I-14 |
| W502 | I-17 |
| W951 | D-11 |

**CO-2** BOARD (COMPONENT SIDE)


SERVO/SYSCON
AUDIO
VIDEO HEAD AMP
IC501
IC509
IC510
IC621
IC506
IC505
IC503
IC502
CN501
1-629-373-
15
A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
8
9
10
11

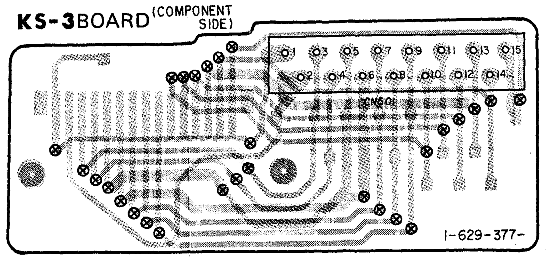
**CO-2** BOARD (CONDUCTOR SIDE)


SERVO/SYSCON
VIDEO HEAD AMP
IC401
(SBX1505)
CN507
W501
W502
12
13
14
15
16
17



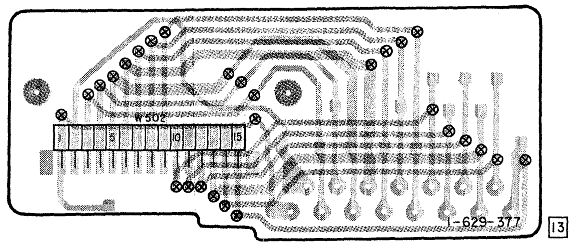
Q622
Q621
Q623
Q629
Q626
Q627
D622
Q625
IC504
IC507
Q522
Q535
CN502
IC508
Q524
Q521
RV502
Q516
Q538
Q112
CN506
CN102
RV501
Q110
D505
Q116
RV101
RV102
IC101
TP103
Q539
Q518
CN101
W502
L106
TP104
TP101
AUDIO
1-629-373-
15
❶
❸
❷
16
17
18
19
20
21
22

**KS-3** BOARD (COMPONENT SIDE)

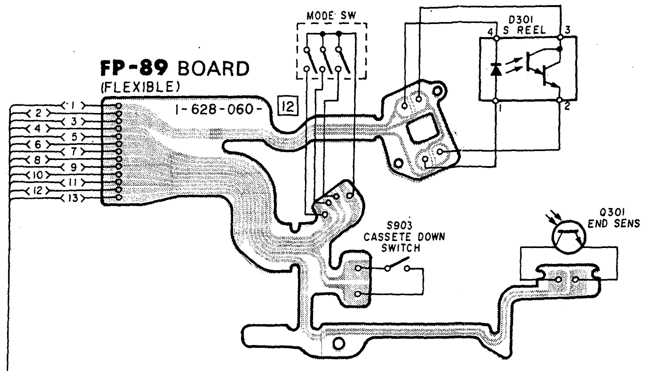


CN501
1-629-377-
13

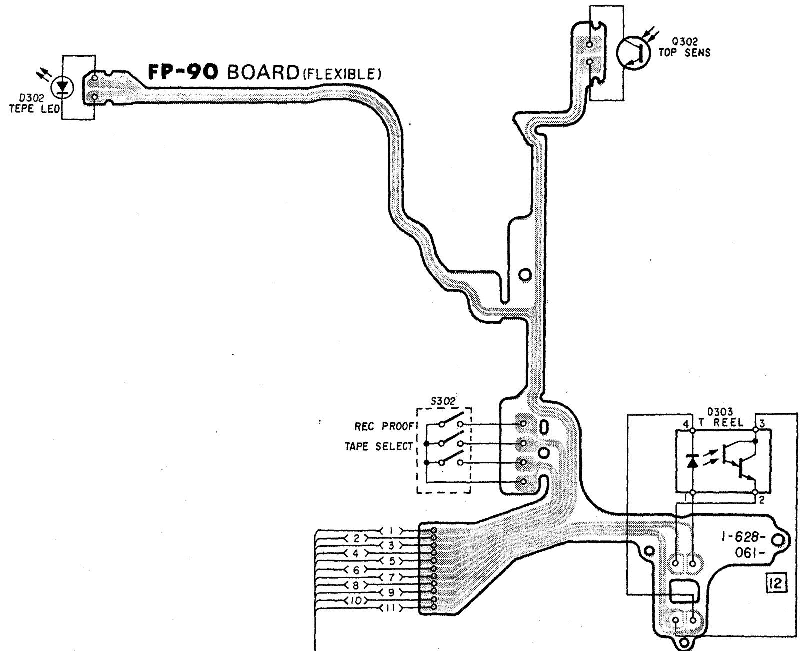
**KS-3** BOARD (CONDUCTOR SIDE)



W502
1-629-377
13

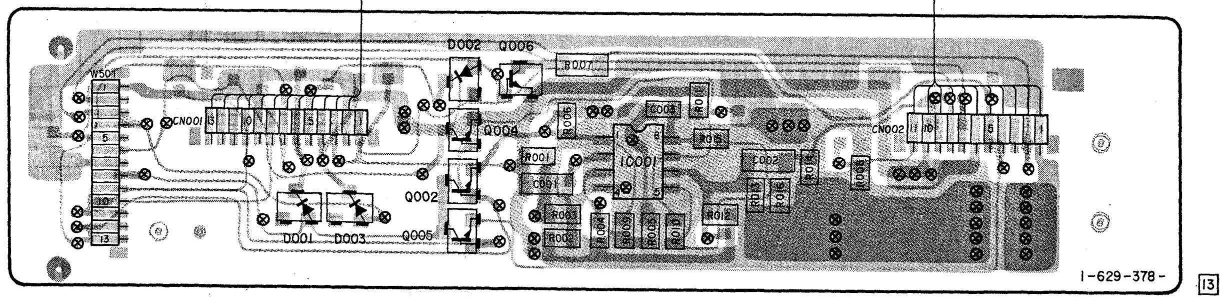


FP-89 BOARD
(FLEXIBLE)
1-628-060-
12
MODE SW
D301
S REEL
S903
CASSETE DOWN
SWITCH
Q301
END SENS



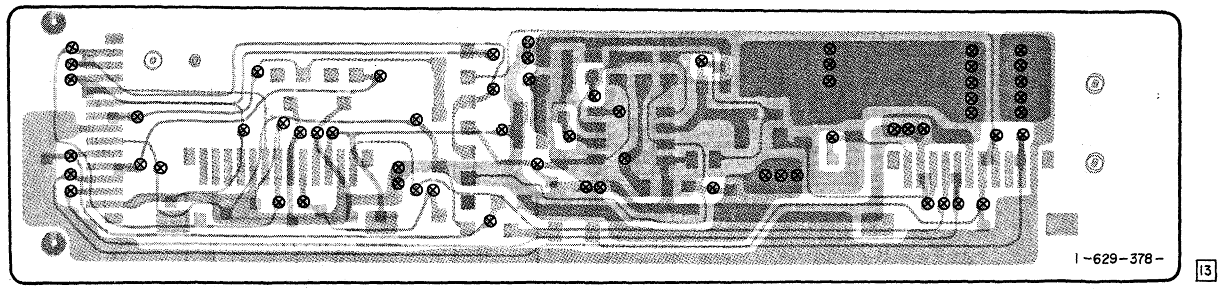
FP-90 BOARD (FLEXIBLE)
D302
TEPE LED
Q302
TOP SENS
S302
REC PROOF
TAPE SELECT
D303
T REEL
1-628-
061-
12

**CC-15** BOARD (COMPONENT SIDE)



W501
CN001
D002
Q006
Q004
Q002
IC001
Q005
D001
D003
CN002
1-629-378-
13

**CC-15** BOARD (CONDUCTOR SIDE)



# CO-2 (HEAD AMP, AUDIO/SERVO, SYSTEM CONTROL) SCHEMATIC DIAGRAMS

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

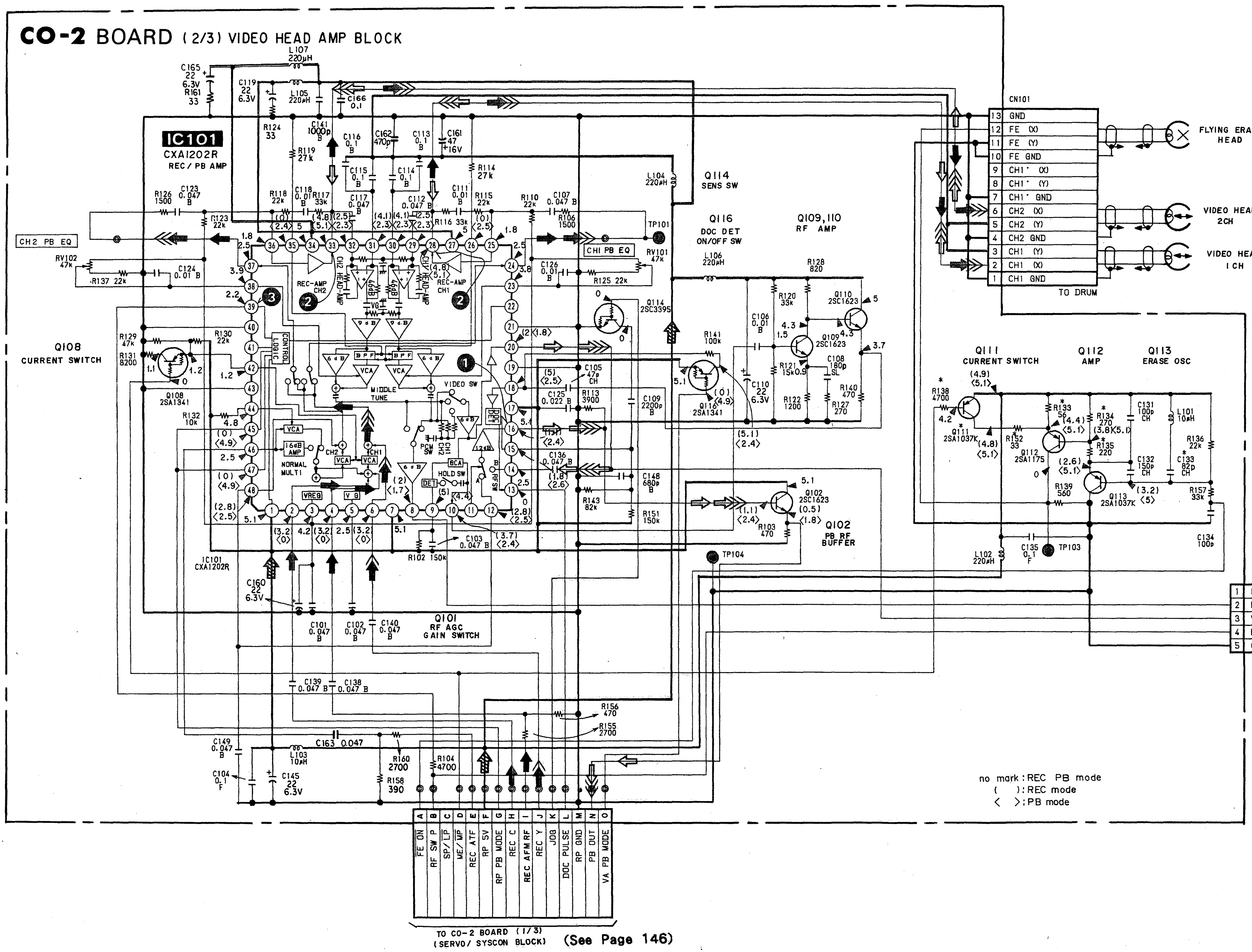
A B C D E F G H I J

— Ref. No. CO-2 BOARD : 6000 series —

- Signal path

|  | VIDEO Signal |  |  | AUDIO Signal |
|---|---|---|---|---|
|  | CHROMA | Y | Y/CHROMA |  |
| REC | ➡ | ➡ | ➡ | ➡ |
| PB |  |  | ⇨ | ⇨ |

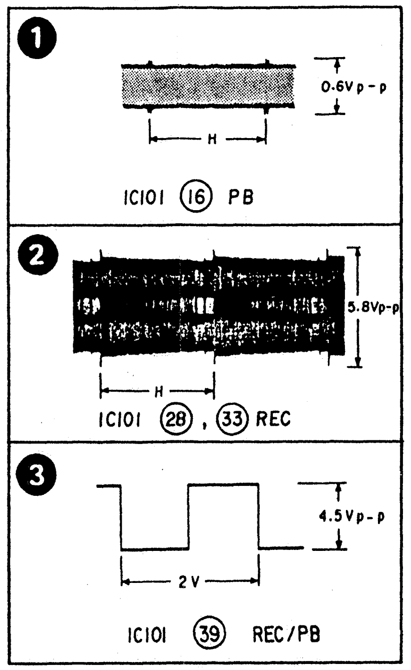
**CO-2** BOARD (2/3) VIDEO HEAD AMP BLOCK



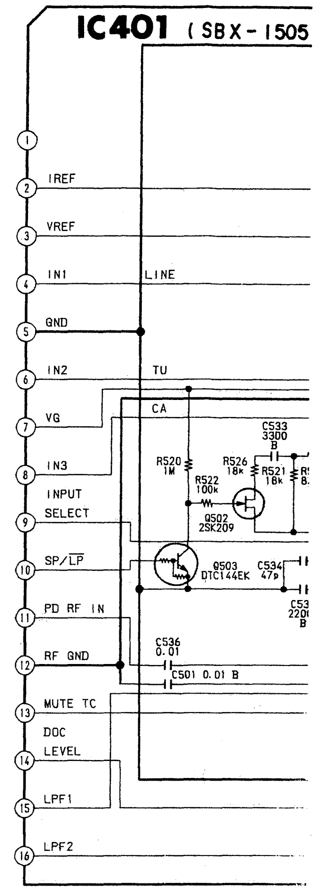
IC101
CXA1202R
REC/PB AMP
CH2 PB EQ
CH1 PB EQ
REC-AMP CH2
REC-AMP CH1
MIDDLE TUNE
VIDEO SW
NORMAL MULTI
HOLD SW
Q108 CURRENT SWITCH
Q108 2SA1341
Q114 SENS SW
Q114 2SC3395
Q116 DOC DET ON/OFF SW
Q116 2SA1341
Q109,110 RF AMP
Q109 2SC1623
Q110 2SC1623
Q102 2SC1623
Q102 PB RF BUFFER
Q101 RF AGC GAIN SWITCH
Q111 CURRENT SWITCH
Q111 2SA1037K
Q112 AMP
Q112 2SA1175
Q113 ERASE OSC
Q113 2SA1037K
TP101
TP103
TP104
CN101
13 GND
12 FE (X)
11 FE (Y)
10 FE GND
9 CH1' (X)
8 CH1' (Y)
7 CH1' GND
6 CH2 (X)
5 CH2 (Y)
4 CH2 GND
3 CH1 (Y)
2 CH1 (X)
1 CH1 GND
TO DRUM
FLYING ERASE HEAD
VIDEO HEAD 2CH
VIDEO HEAD 1CH
CN102
1 N.C
2 PCM OUT
3 VIDEO RF OUT
4 RF SW P
5 GND
CHECK PIN
A FE ON
B RF SW P
C SP/LP
D ME/MP
E REC ATF
F RP 5V
G RP PB MODE
H REC C
I REC AFM RF
J REC Y
K JOG
L DOC PULSE
M RP GND
N PB OUT
O VA PB MODE
TO CO-2 BOARD (1/3) (SERVO/ SYSCON BLOCK)
(See Page 146)

no mark : REC PB mode
( ) : REC mode
< > : PB mode

**CO-2** BOARD (HEADAMP)

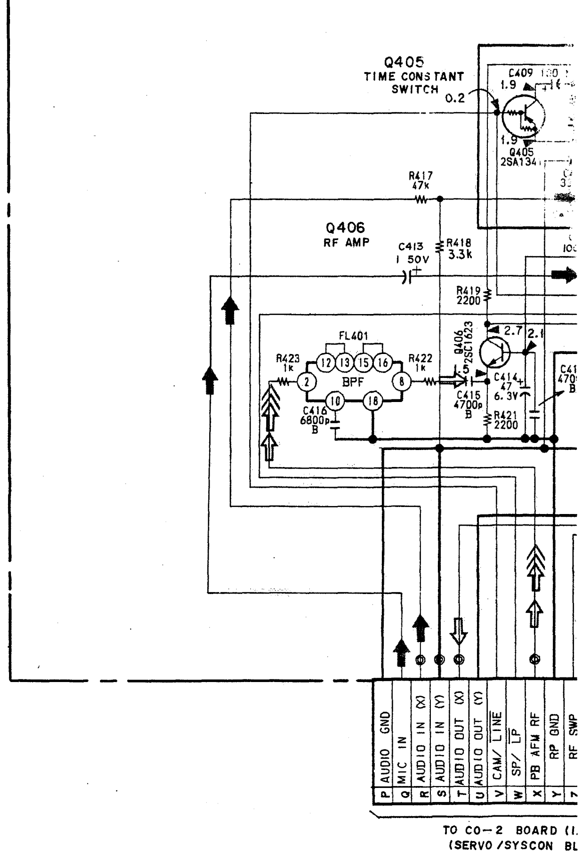


1
0.6Vp-p
H
IC101 ⑯ PB
2
5.8Vp-p
H
IC101 ㉘ , ㉝ REC
3
4.5Vp-p
2V
IC101 ㊴ REC/PB

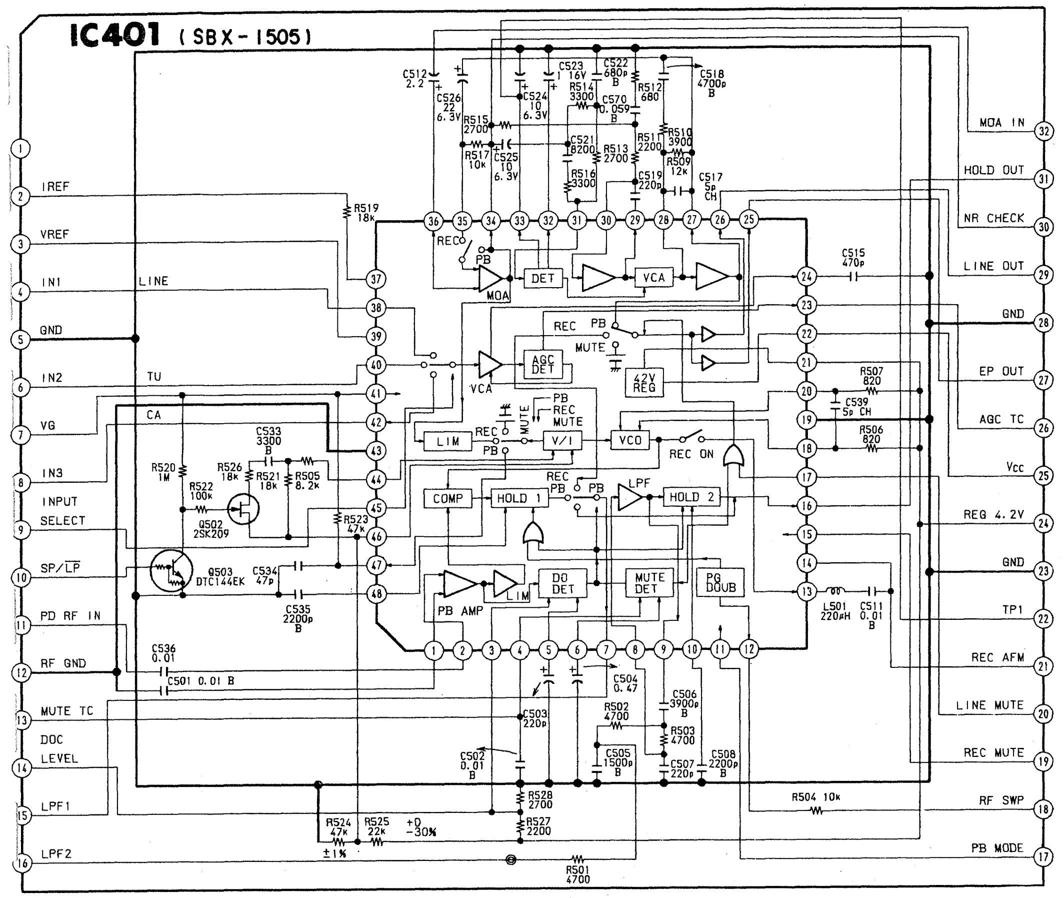


IC401 (SBX-1505
1
2 IREF
3 VREF
4 IN1
5 GND
6 IN2
7 VG
8 IN3
9 INPUT SELECT
10 SP/LP
11 PD RF IN
12 RF GND
13 MUTE TC
14 DOC LEVEL
15 LPF1
16 LPF2
LINE
TU
CA
Q502 2SK209
Q503 DTC144EK

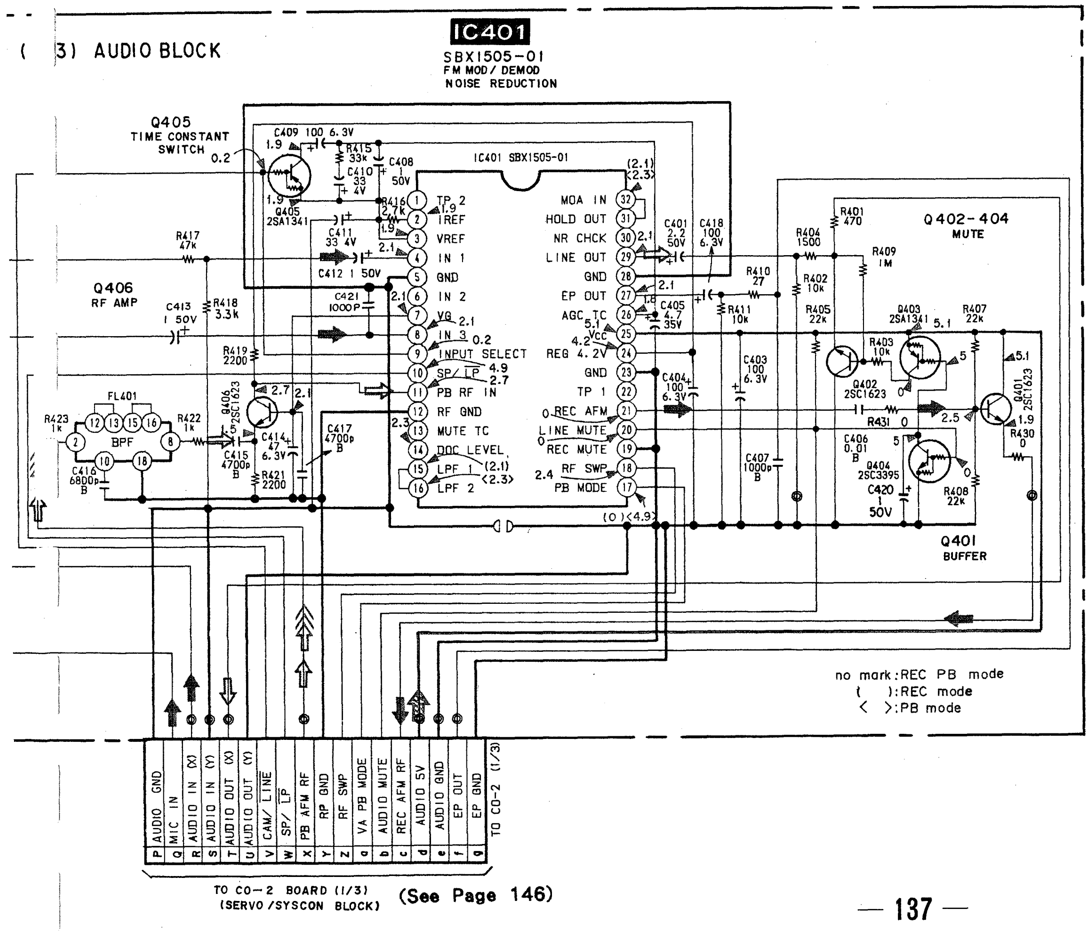
**CO-2** BOARD (3/3) AUDIO BLOCK



Q405 TIME CONSTANT SWITCH
Q405 2SA1341
Q406 RF AMP
Q406 2SC1623
FL401
BPF
P AUDIO GND
Q MIC IN
R AUDIO IN (X)
S AUDIO IN (Y)
T AUDIO OUT (Y)
U AUDIO OUT (X)
V CAM/LINE
W SP/LP
X PB AFM RF
Y RP GND
RF SWP
TO CO-2 BOARD (1/ (SERVO/SYSCON BL


IC401 (SBX-1505)
IREF
VREF
IN1
GND
IN2
VG
IN3
INPUT SELECT
SP/LP
PD RF IN
RF GND
MUTE TC
DOC LEVEL
LPF1
LPF2
LINE
TU
CA
MOA IN
HOLD OUT
NR CHECK
LINE OUT
GND
EP OUT
AGC TC
Vcc
REG 4.2V
GND
TP1
REC AFM
LINE MUTE
REC MUTE
RF SWP
PB MODE
MOA
DET
VCA
AGC DET
4.2V REG
LIM
V/I
VCO
REC ON
COMP
HOLD 1
LPF
HOLD 2
PB AMP
LIM
DO DET
MUTE DET
PG DOUB
Q502 2SK209
Q503 DTC144EK
L501 220μH
R524 47k ±1%
R525 22k
+0 -30%
R501 4700

( 3) AUDIO BLOCK


IC401
SBX1505-01
FM MOD/DEMOD
NOISE REDUCTION
Q405
TIME CONSTANT SWITCH
Q405 2SA1341
Q406
RF AMP
Q406 2SC1623
FL401
BPF
Q402-404
MUTE
Q402 2SC1623
Q403 2SA1341
Q404 2SC3395
Q401
BUFFER
Q401 2SC1623
no mark:REC PB mode
( ):REC mode
< >:PB mode
AUDIO GND
MIC IN
AUDIO IN (X)
AUDIO IN (Y)
AUDIO OUT (X)
AUDIO OUT (Y)
CAM/LINE
SP/LP
PB AFM RF
RP GND
RF SWP
VA PB MODE
AUDIO MUTE
REC AFM RF
AUDIO 5V
AUDIO GND
EP OUT
EP GND
TO CO-2 (1/3)
TO CO-2 BOARD (1/3)
(SERVO/SYSCON BLOCK)
(See Page 146)

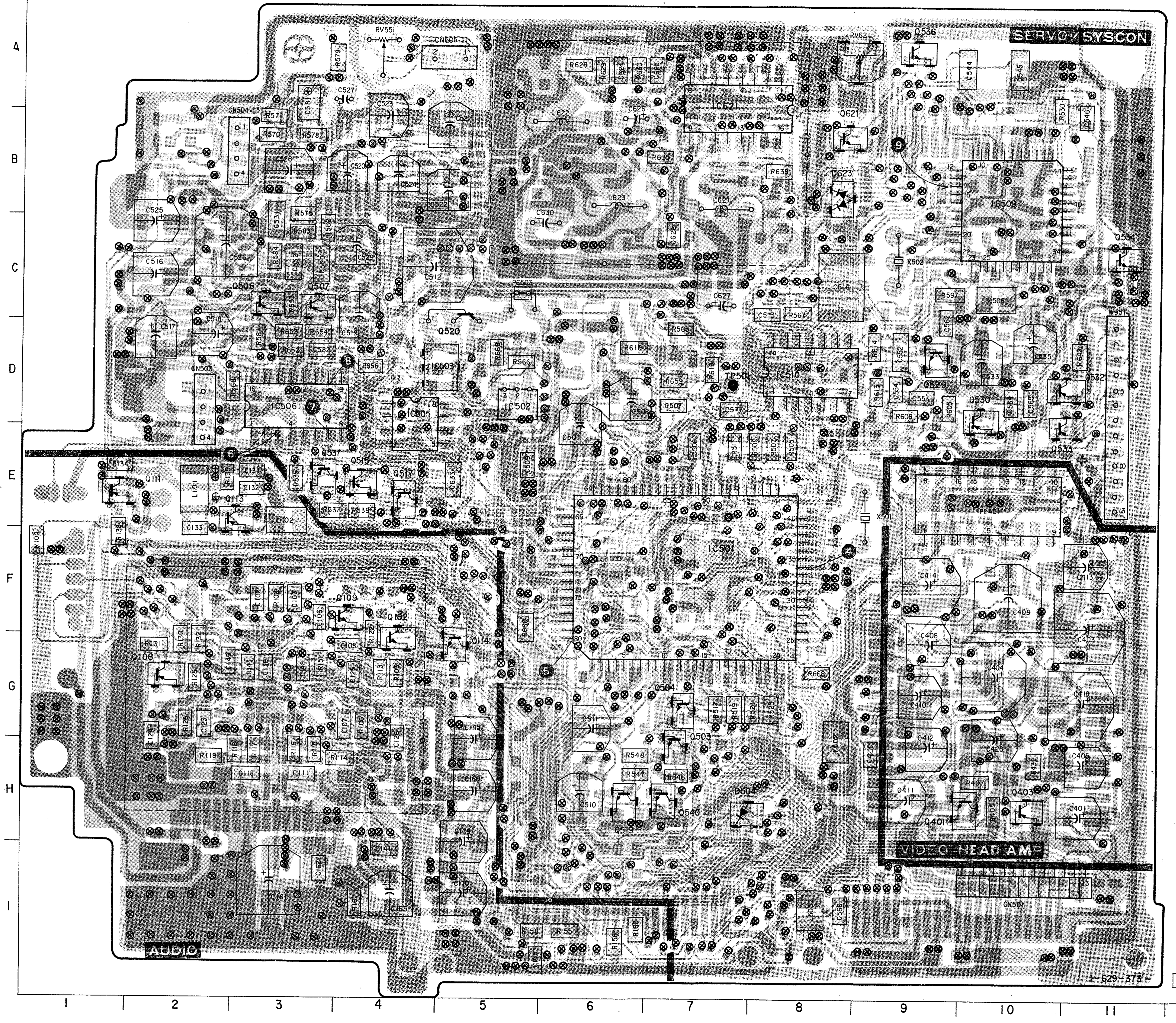
## CO-2 (HEAD AMP, AUDIO/SERVO, SYSTEM CONTROL), CC-15 (TFG/SFG AMP), KS-3 (CAPSTAN MOTOR DRIVE, JUNCTION), FP-89 (TAPE END SENSOR), FP-90 (TAPE TOP SENSOR) PRINTED WIRING BOARDS

— Ref. No. CO-2, FP-89 BOARDS : 6000 series, CC-15, FP-90, KS-3 BOARDS : 7000 series —

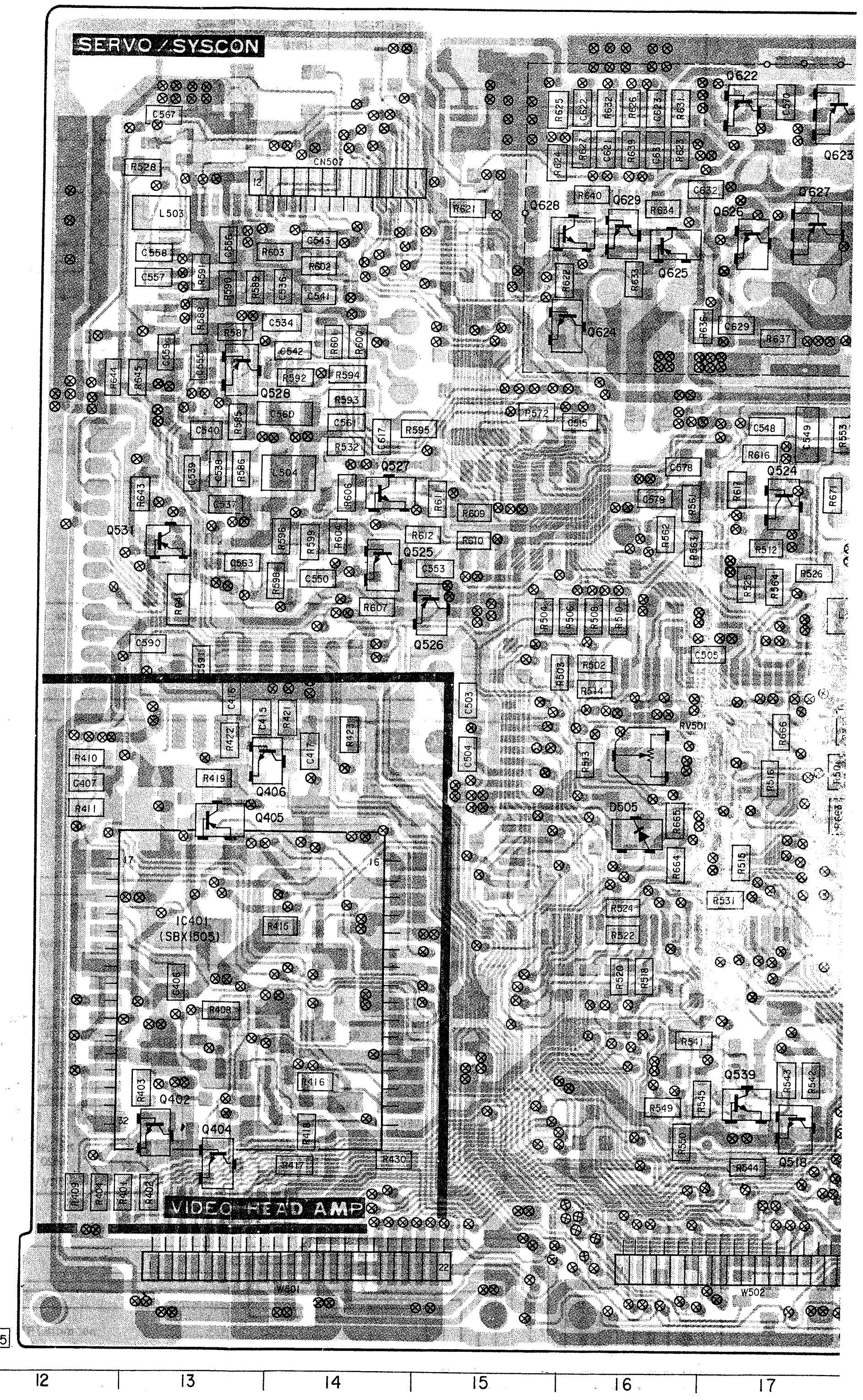
CO-2 BOARD

| | |
|---|---|
| CN101 | H-21 |
| CN102 | F-22 |
| CN501 | I-10 |
| CN502 | C-21 |
| CN503 | D-2 |
| CN504 | B-3 |
| CN505 | A-5 |
| CN506 | E-22 |
| CN507 | B-14 |
| D504 | H-8 |
| D505 | F-16 |
| D621 | A-18 |
| D622 | B-18 |
| D623 | B-8 |
| IC101 | G-20 |
| IC401 | G-13 |
| IC501 | F-7 |
| IC502 | D-5 |
| IC503 | D-5 |
| IC504 | B-19 |
| IC505 | D-4 |
| IC506 | D-3 |
| IC507 | B-20 |
| IC508 | C-20 |
| IC509 | B-10 |
| IC510 | D-8 |
| IC621 | A-7 |
| Q102 | F-4 |
| Q108 | G-2 |
| Q109 | F-4 |
| Q110 | F-19 |
| Q111 | E-1 |
| Q112 | E-21 |
| Q113 | E-3 |
| Q114 | G-5 |
| Q116 | G-18 |
| Q401 | H-10 |
| Q402 | H-13 |
| Q403 | H-10 |
| Q404 | H-13 |
| Q405 | F-13 |
| Q406 | F-13 |
| Q503 | H-7 |
| Q504 | G-7 |
| Q506 | C-3 |
| Q507 | C-3 |
| Q515 | E-4 |
| Q516 | E-19 |
| Q517 | E-4 |
| Q518 | H-17 |
| Q519 | H-6 |
| Q520 | C-5 |
| Q521 | D-19 |
| Q522 | B-21 |
| Q524 | D-17 |
| Q525 | D-14 |
| Q526 | E-15 |
| Q527 | D-14 |
| Q528 | C-13 |
| Q529 | D-9 |
| Q530 | D-10 |
| Q531 | D-13 |
| Q532 | D-11 |
| Q533 | D-11 |
| Q534 | C-11 |
| Q535 | B-21 |
| Q536 | A-9 |
| Q537 | E-3 |
| Q538 | E-19 |
| Q539 | H-17 |
| Q540 | H-7 |
| Q621 | B-8 |
| Q622 | A-17 |
| Q623 | A-17 |
| Q624 | C-16 |
| Q625 | B-16 |
| Q626 | B-17 |
| Q627 | B-17 |
| Q628 | B-16 |
| Q629 | B-16 |
| Q630 | E-8 |
| RV101 | G-19 |
| RV102 | G-21 |
| RV501 | F-16 |
| RV502 | D-20 |
| RV551 | A-4 |
| RV621 | A-8 |
| TP101 | I-19 |
| TP103 | G-22 |
| TP104 | I-19 |
| TP501 | D-7 |
| W501 | I-14 |
| W502 | I-17 |
| W951 | D-11 |

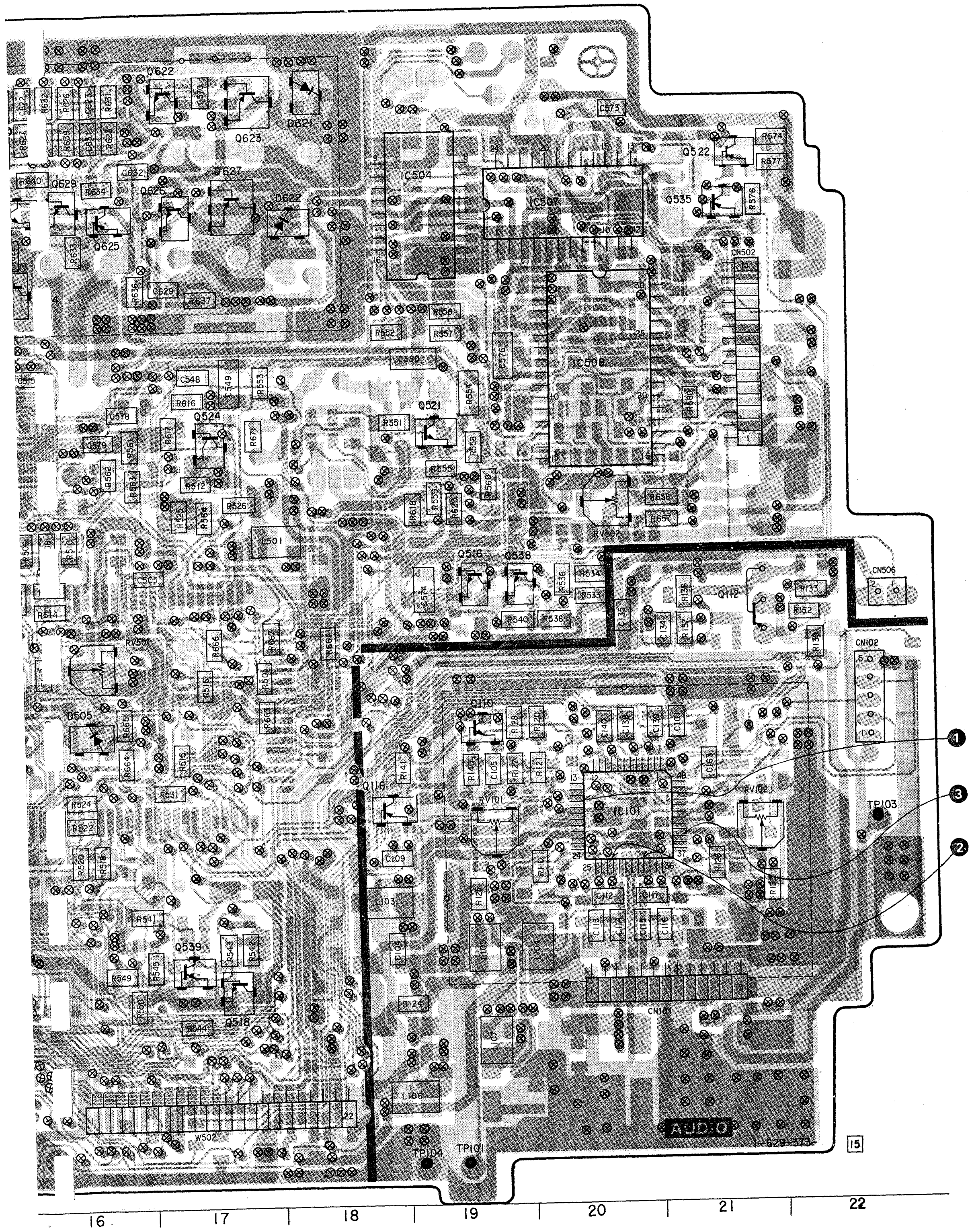
**CO-2** BOARD (COMPONENT SIDE)


SERVO/SYSCON
VIDEO HEAD AMP
AUDIO
IC501
IC509
IC510
IC621
IC506
IC502
IC505
IC503
CN501
1-629-373-
15
A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
8
9
10
11

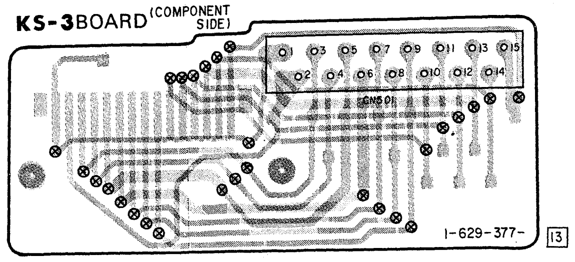
**CO-2**BOARD (CONDUCTOR SIDE)


SERVO/SYSCON
VIDEO HEAD AMP
IC401
(SBX1505)
CN507
W501
W502
12
13
14
15
16
17

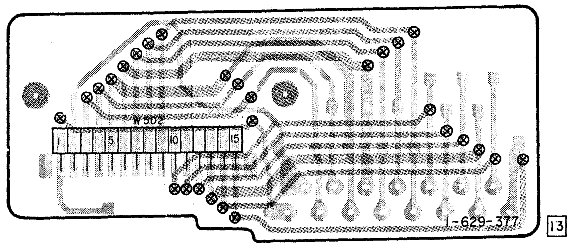
SERVO, SYSTEM CONTROL　SERVO, SYSTEM CONTROL


Q622
Q623
D621
Q627
D622
Q629
Q625
IC504
IC507
Q522
Q535
CN502
IC508
Q521
Q524
IC501
Q516
Q538
Q112
CN506
CN102
Q110
Q116
IC101
RV101
RV102
TP103
CN101
D505
Q539
Q518
W502
TP104
TP101
AUDIO
1-629-373
15
16
17
18
19
20
21
22

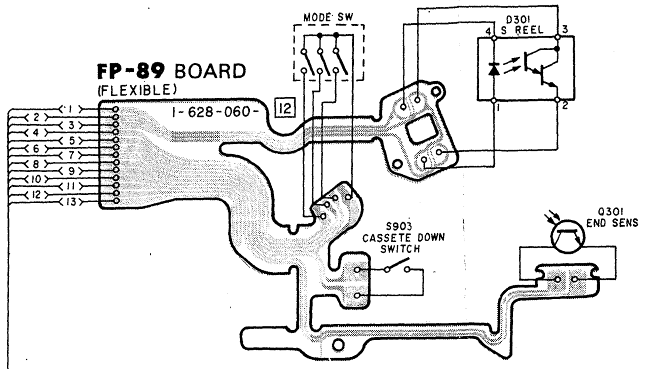
## KS-3 BOARD (COMPONENT SIDE)


CN501
1-629-377-
13

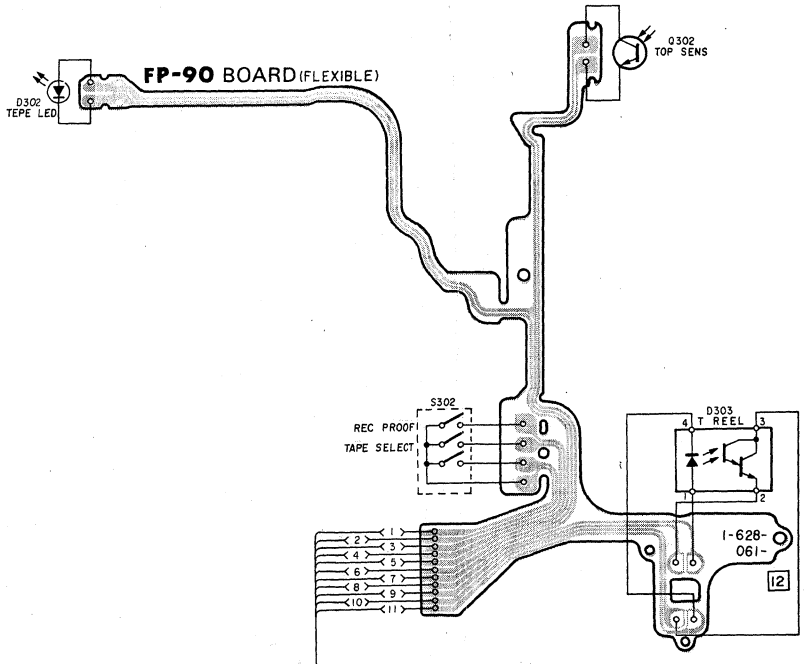
## KS-3 BOARD (CONDUCTOR SIDE)


W502
1
5
10
15
1-629-377
13

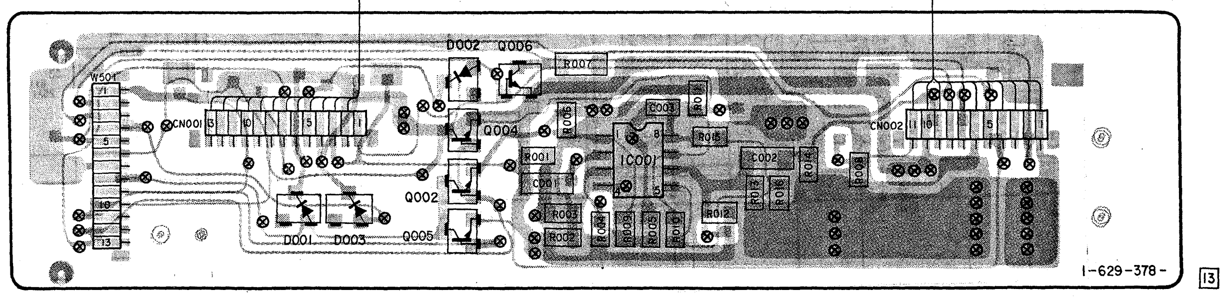
## FP-89 BOARD (FLEXIBLE)


MODE SW
D301
S REEL
1-628-060-
12
S903
CASSETE DOWN
SWITCH
Q301
END SENS

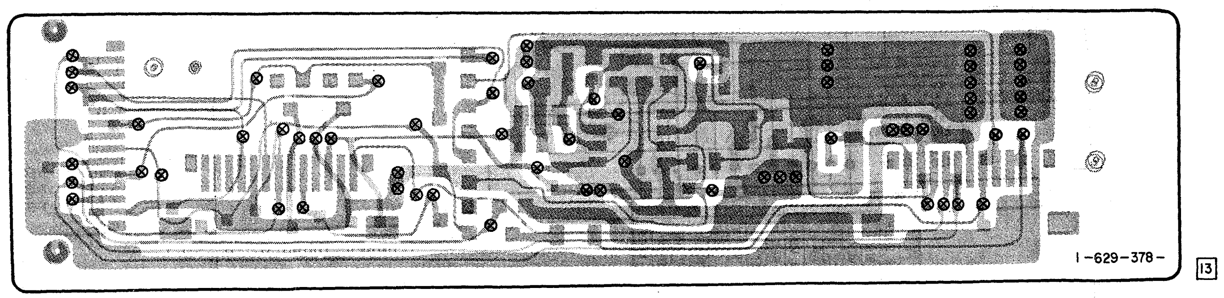
## FP-90 BOARD (FLEXIBLE)


D302
TEPE LED
Q302
TOP SENS
S302
REC PROOF
TAPE SELECT
D303
T REEL
1-628-
061-
12

## CC-15 BOARD (COMPONENT SIDE)

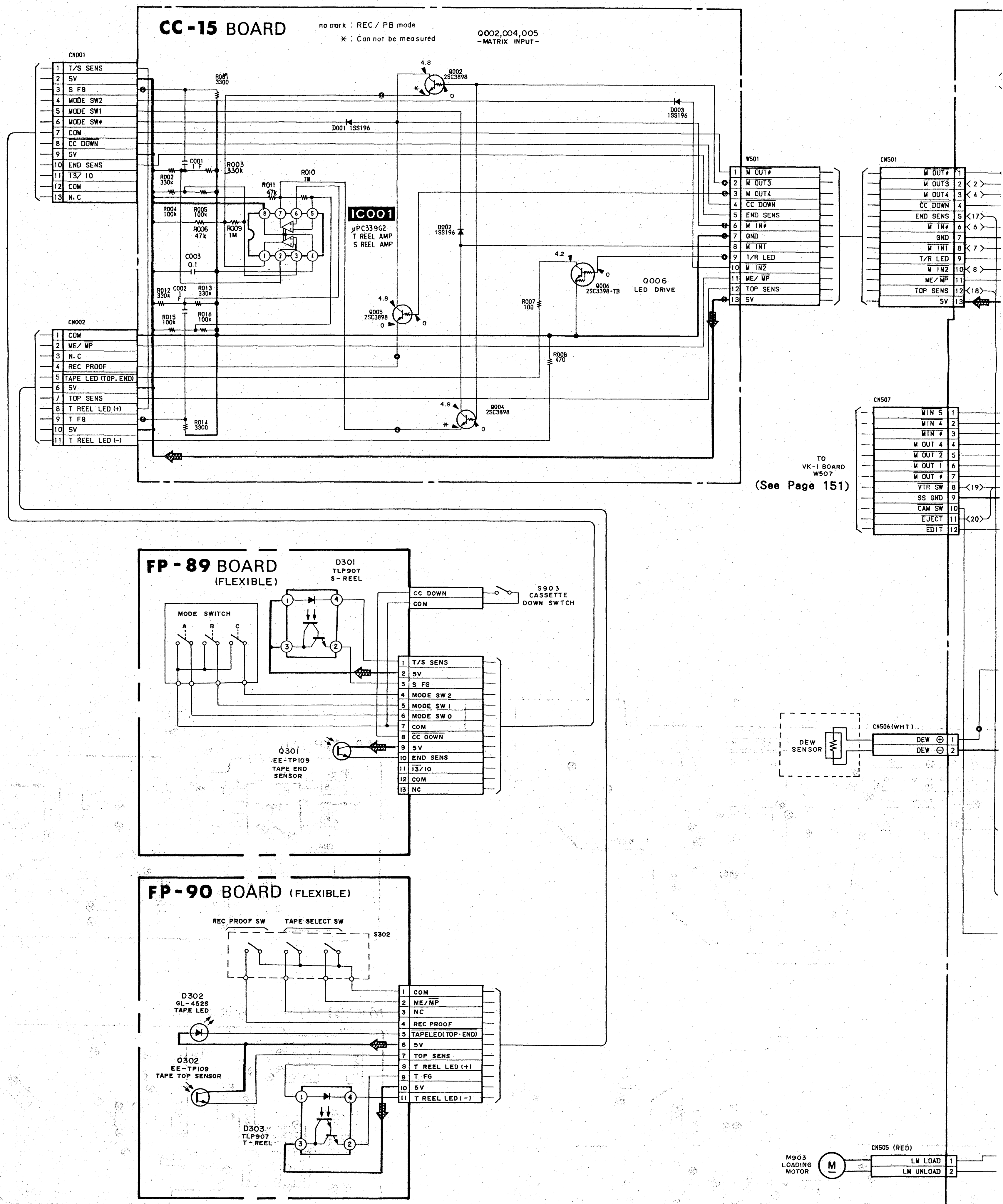

W501
CN001
D002
Q006
R007
Q004
IC001
Q002
CN002
D001
D003
Q005
1-629-378-
13

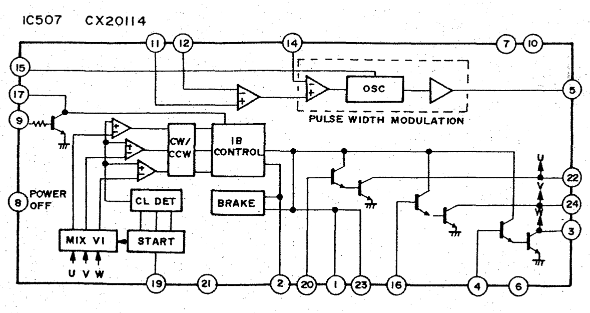
## CC-15 BOARD (CONDUCTOR SIDE)

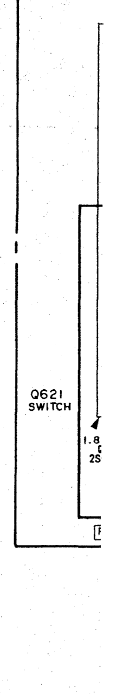


## CO-2 (HEAD AMP, AUDIO/SERVO, SYSTEM CONTROL), CC-15 (TFG/SFG AMP), KS-3 (CAPSTAN MOTOR DRIVE JUNCTION), FP-89 (TAPE E

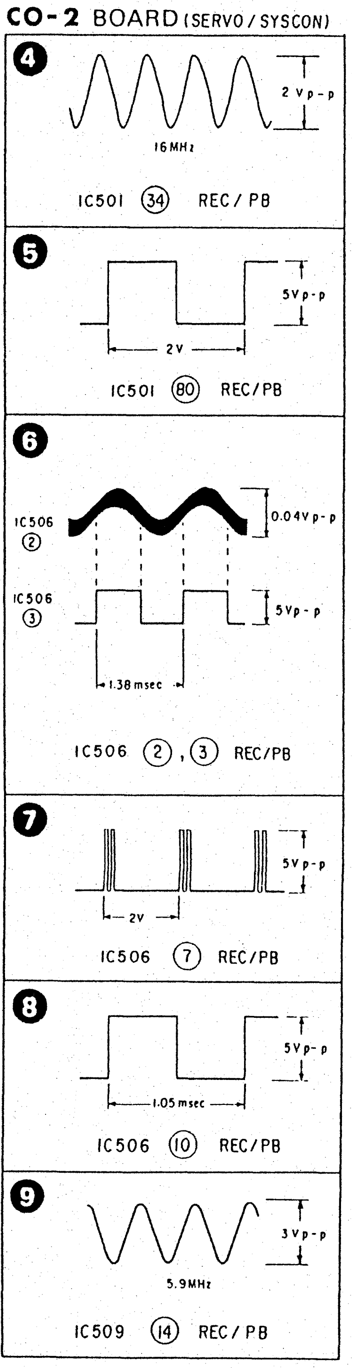
— Ref. No. CO-2, FP-89 BOARDS : 6000 series, CC-15, FP-90, KS-3 BOARDS : 7000 series —


1 2 3 4 5 6 7 8 9
A B C D E F G H I J K L M N O P
CC-15 BOARD
no mark : REC / PB mode
✳ : Can not be measured
Q002,004,005 -MATRIX INPUT-
CN001
1 T/S SENS
2 5V
3 S FG
4 MODE SW2
5 MODE SW1
6 MODE SW0
7 COM
8 CC DOWN
9 5V
10 END SENS
11 13/10
12 COM
13 N.C
R001 3300
Q002 2SC3898
4.8
D001 1SS196
D003 1SS196
C001 1 F
R002 330k
R003 330k
R010 1M
R011 47k
R004 100k
R005 100k
R006 47k
R009 1M
IC001
μPC339G2
T REEL AMP
S REEL AMP
D002 1SS196
C003 0.1
R012 330k
C002 1 F
R013 330k
R015 100k
R016 100k
R014 3300
Q005 2SC3898
4.8
Q006 2SC3398-TB
Q006 LED DRIVE
4.2
R007 100
R008 470
Q004 2SC3898
4.9
CN002
1 COM
2 ME/MP
3 N.C
4 REC PROOF
5 TAPE LED (TOP. END)
6 5V
7 TOP SENS
8 T REEL LED (+)
9 T FG
10 5V
11 T REEL LED (-)
W501
1 M OUT0
2 M OUT3
3 M OUT4
4 CC DOWN
5 END SENS
6 M IN0
7 GND
8 M IN1
9 T/R LED
10 M IN2
11 ME/MP
12 TOP SENS
13 5V
CN501
M OUT0 1
M OUT3 2
M OUT4 3
CC DOWN 4
END SENS 5
M IN0 6
GND 7
M IN1 8
T/R LED 9
M IN2 10
ME/MP 11
TOP SENS 12
5V 13
CN507
MIN 5 1
MIN 4 2
MIN 0 3
M OUT 4 4
M OUT 2 5
M OUT 1 6
M OUT 0 7
VTR SW 8
SS GND 9
CAM SW 10
EJECT 11
EDIT 12
TO VK-1 BOARD W507
(See Page 151)
FP-89 BOARD (FLEXIBLE)
D301 TLP907 S-REEL
MODE SWITCH
A B C
CC DOWN
COM
S903 CASSETTE DOWN SWTCH
1 T/S SENS
2 5V
3 S FG
4 MODE SW 2
5 MODE SW 1
6 MODE SW 0
7 COM
8 CC DOWN
9 5V
10 END SENS
11 13/10
12 COM
13 NC
Q301 EE-TP109 TAPE END SENSOR
DEW SENSOR
CN506 (WHT)
DEW ⊕ 1
DEW ⊖ 2
FP-90 BOARD (FLEXIBLE)
REC PROOF SW
TAPE SELECT SW
S302
D302 GL-452S TAPE LED
Q302 EE-TP109 TAPE TOP SENSOR
D303 TLP907 T-REEL
1 COM
2 ME/MP
3 NC
4 REC PROOF
5 TAPELED (TOP-END)
6 5V
7 TOP SENS
8 T REEL LED (+)
9 T FG
10 5V
11 T REEL LED (-)
M903 LOADING MOTOR
CN505 (RED)
LM LOAD 1
LM UNLOAD 2


IC507 CX20114
OSC
PULSE WIDTH MODULATION
CW/CCW
IB CONTROL
CL DET
BRAKE
START
MIX VI
U V W
POWER OFF


Q621 SWITCH

CO-2 BOARD (SERVO / SYSCON)

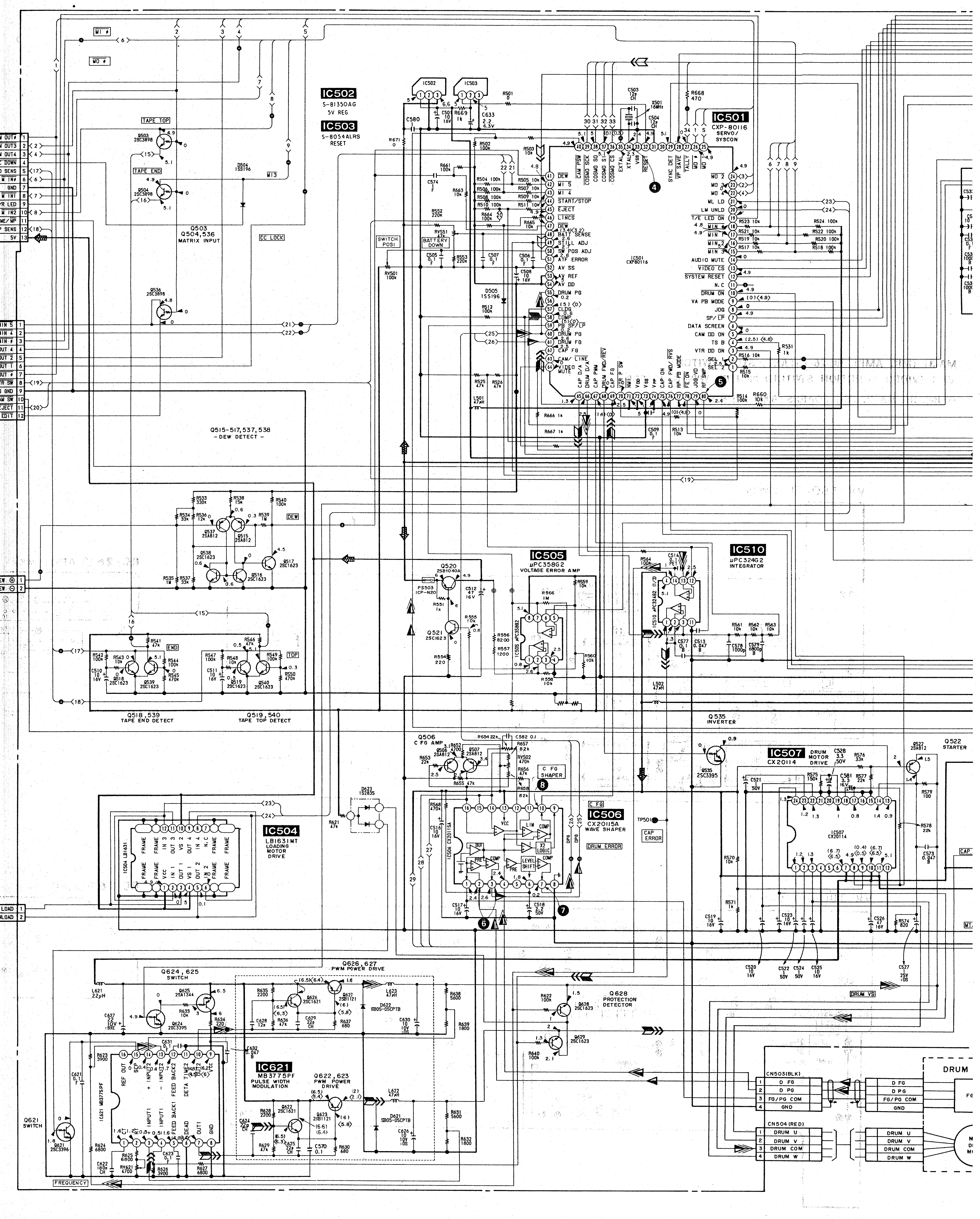


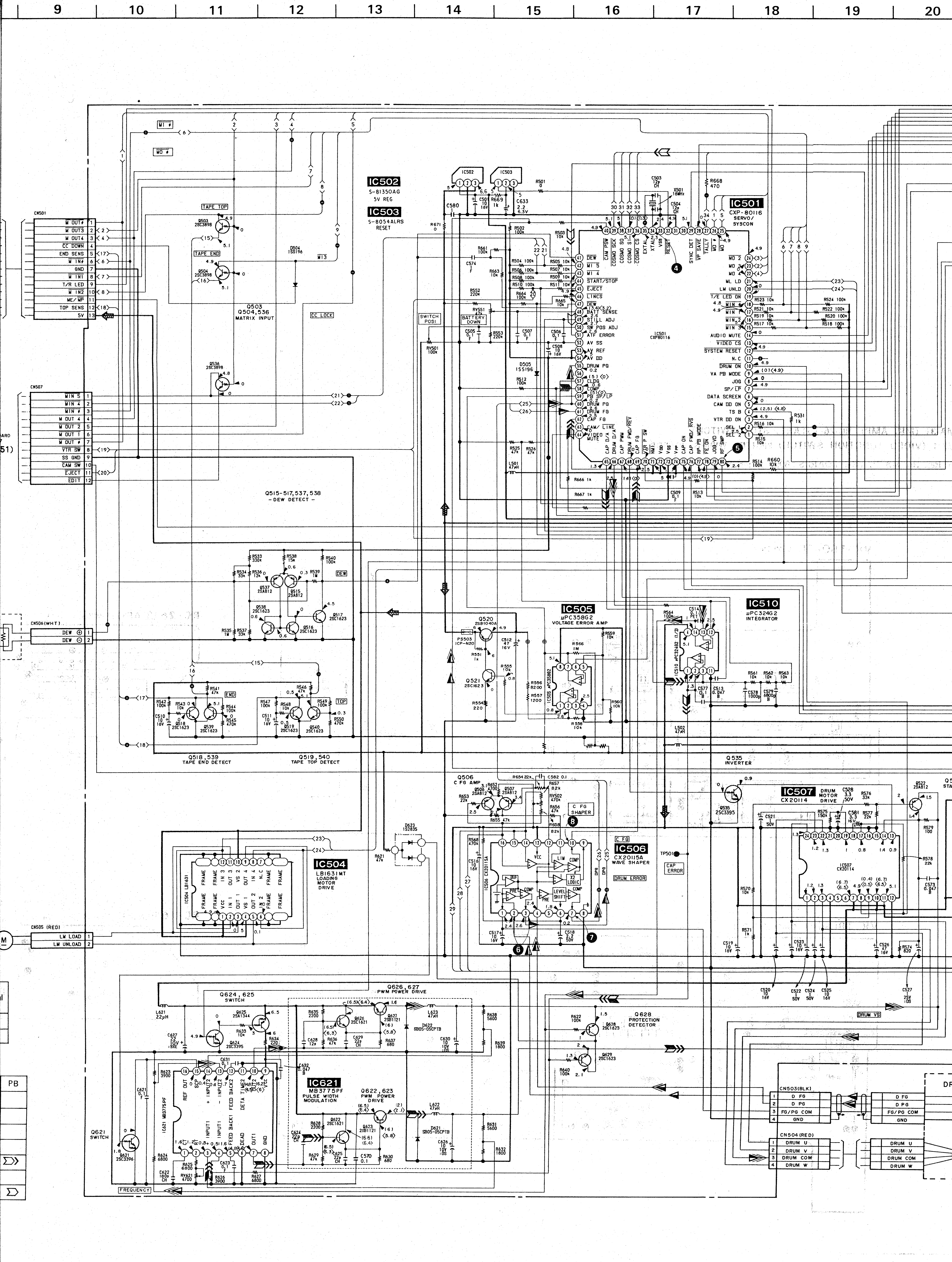
- Signal path

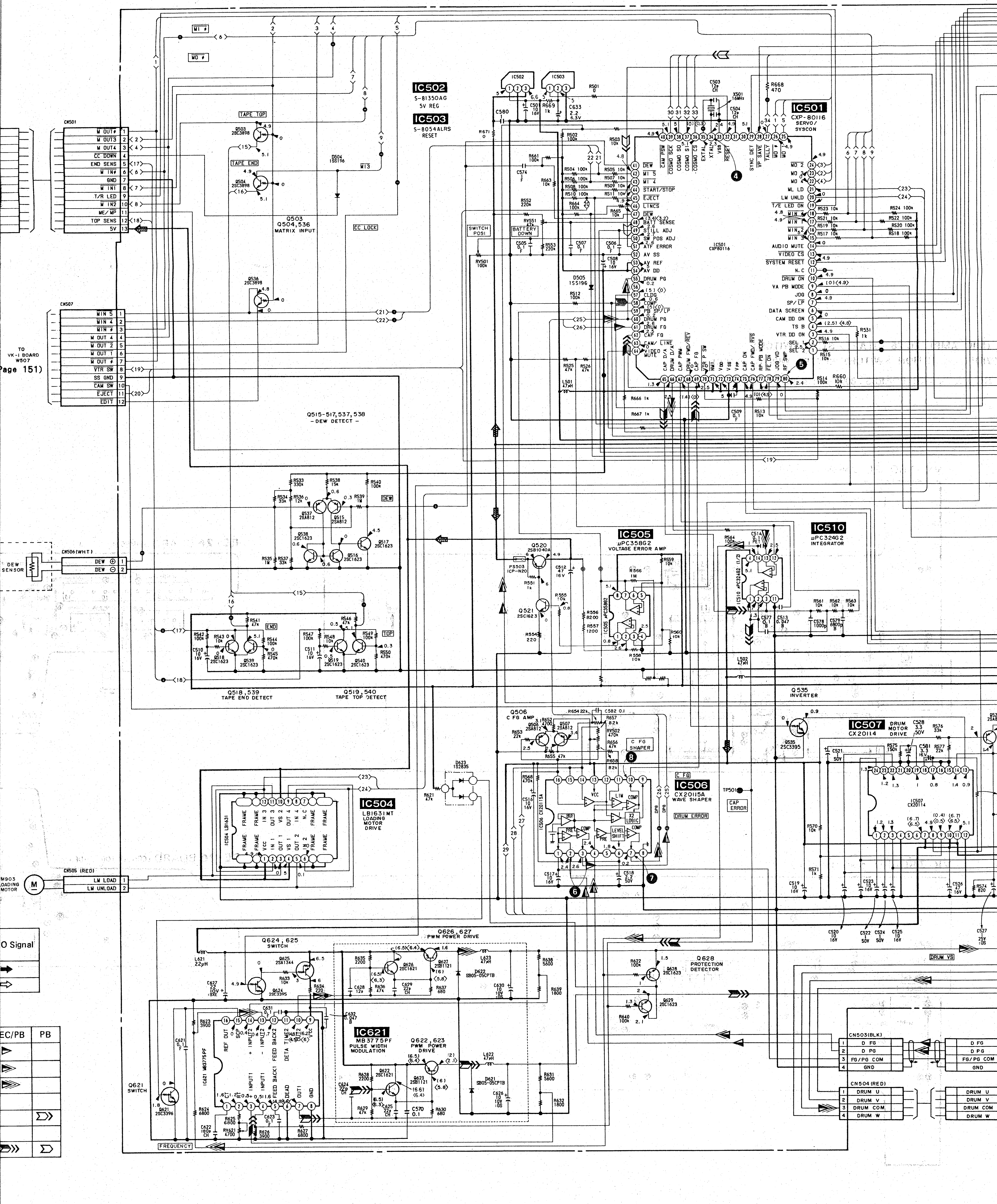
| | VIDEO Signal | | | AUDIO Signal |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | ➡ | | ➡≫ | ➡ |
| PB | | | ⇨≫ | ⇨ |

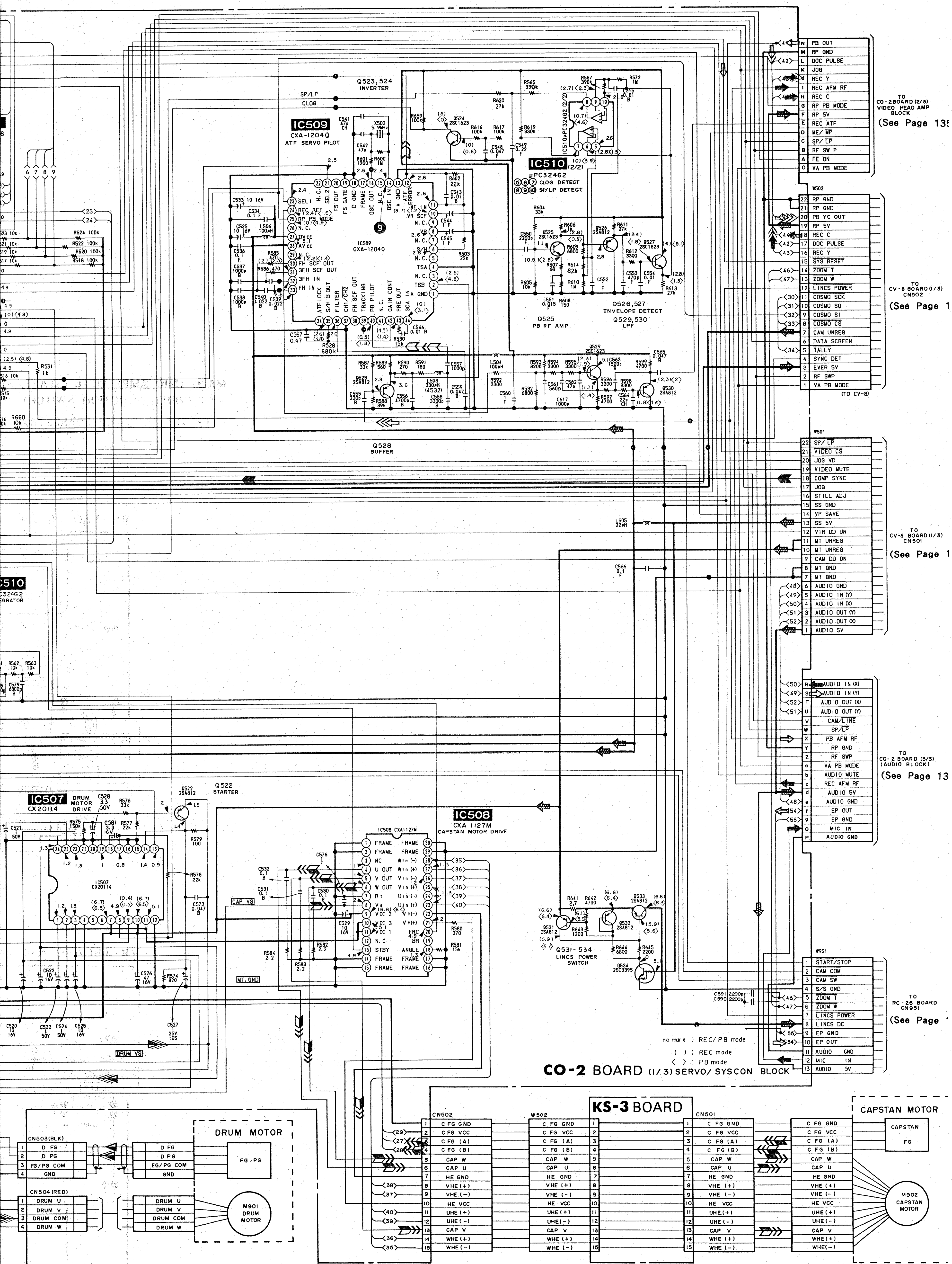
- Signal path

| | REC | REC/PB | PB |
|---|---|---|---|
| Drum speed servo | | ▷ | |
| Drum phase servo | | ▷> | |
| Drum servo (speed and phase) | | ▷≫ | |
| Capstan speed servo | | | |
| Capstan phase servo | | | ⊐≫ |
| Capstan servo (speed and phase) | | | |
| Ref. signal | ➧ | ➧≫ | ⊐> |


IC502
S-81350AG
5V REG
IC503
S-8054ALRS
RESET
IC501
CXP-80116
SERVO/
SYSCON
IC501
CXP80116
X501
16MHz
TAPE TOP
TAPE END
Q503
Q504,536
MATRIX INPUT
CC LOCK
SWITCH POSI
BATTERY DOWN
DEW
START/STOP
EJECT
LINCS
BATT SENSE
STILL ADJ
SW POS ADJ
ATF ERROR
AV SS
AV REF
AV DD
DRUM PG
CLDG
COMP
PB SP/LP
DRUM PG
CAP FG
CAM/LINE
VIDEO MUTE
ML LD
LM UNLD
T/E LED ON
AUDIO MUTE
VIDEO CS
SYSTEM RESET
DRUM ON
VA PB MODE
JOG
SP/LP
DATA SCREEN
CAM DD ON
TS B
VTR DD ON
SEL 1
SEL 2
Q515-517,537,538
-DEW DETECT-
IC505
μPC358G2
VOLTAGE ERROR AMP
IC510
μPC324G2
INTEGRATOR
Q520
2SB1040A
Q521
2SC1623
PS503
ICP-N20
Q518,539
TAPE END DETECT
Q519,540
TAPE TOP DETECT
Q535
INVERTER
Q506
C FG AMP
C FG SHAPER
IC504
LB1631MT
LOADING MOTOR DRIVE
IC506
CX20115A
WAVE SHAPER
C FG
CAP ERROR
DRUM ERROR
TP501
IC507
CX20114
DRUM MOTOR DRIVE
Q522
STARTER
Q624,625
SWITCH
Q626,627
PWM POWER DRIVE
IC621
MB3775PF
PULSE WIDTH MODULATION
Q622,623
PWM POWER DRIVE
Q628
PROTECTION DETECTOR
Q621
SWITCH
FREQUENCY
DRUM VS
CN503(BLK)
1 D FG
2 D PG
3 FG/PG COM
4 GND
CN504(RED)
1 DRUM U
2 DRUM V
3 DRUM COM
4 DRUM W
DRUM
D FG
D PG
FG/PG COM
GND
DRUM U
DRUM V
DRUM COM
DRUM W
LOAD
UNLOAD
❹
❺
❻
❼
❽


9
10
11
12
13
14
15
16
17
18
19
20
IC502
S-81350AG
5V REG
IC503
S-8054ALRS
RESET
IC501
CXP-80116
SERVO/
SYSCON
IC501
CXP80116
CN501
M OUT#
M OUT3
M OUT4
CC DOWN
END SENS
M IN#
GND
M IN1
T/R LED
M IN2
ME/MP
TOP SENS
5V
TAPE TOP
TAPE END
Q503
Q504,536
MATRIX INPUT
CC LOCK
SWITCH POSI
BATTERY DOWN
CN507
MIN 5
MIN 4
MIN #
M OUT 4
M OUT 2
M OUT 1
M OUT #
VTR SW
SS GND
CAM SW
EJECT
EDIT
Q515-517,537,538
- DEW DETECT -
DEW
CN506(WHT)
DEW ⊕
DEW ⊖
END
TOP
Q518,539
TAPE END DETECT
Q519,540
TAPE TOP DETECT
IC505
μPC358G2
VOLTAGE ERROR AMP
IC510
μPC324G2
INTEGRATOR
Q520
2SB1040A
PS503
ICP-N20
Q521
2SC1623
Q535
INVERTER
Q506
C FG AMP
C FG SHAPER
C FG
IC506
CX20115A
WAVE SHAPER
DRUM ERROR
TP501
CAP ERROR
IC507
CX20114
DRUM MOTOR DRIVE
IC504
LB1631MT
LOADING MOTOR DRIVE
CN505 (RED)
LM LOAD
LM UNLOAD
Q624,625
SWITCH
Q626,627
PWM POWER DRIVE
IC621
MB3775PF
PULSE WIDTH MODULATION
Q622,623
PWM POWER DRIVE
Q621
SWITCH
FREQUENCY
Q628
PROTECTION DETECTOR
DRUM VS
CN503(BLK)
D FG
D PG
FG/PG COM
GND
CN504(RED)
DRUM U
DRUM V
DRUM COM
DRUM W
PB
DEW
MI 5
MI 4
START/STOP
EJECT
LINCS
BATT SENSE
STILL ADJ
SW POS ADJ
ATF ERROR
AV SS
AV REF
AV DD
DRUM PG
CLDG
COMP
PB SP/LP
DRUM PG
DRUM FG
CAP FG
CAM/LINE
VIDEO MUTE
MO 2
MO #
MO
ML LD
LM UNLD
T/E LED ON
MIN 4
MIN 1
MIN 2
MIN 3
AUDIO MUTE
VIDEO CS
SYSTEM RESET
N.C
DRUM ON
VA PB MODE
JOG
SP/LP
DATA SCREEN
CAM DD ON
TS B
VTR DD ON
SEL 1
SEL 2
❹
❺
❻
❼
❽

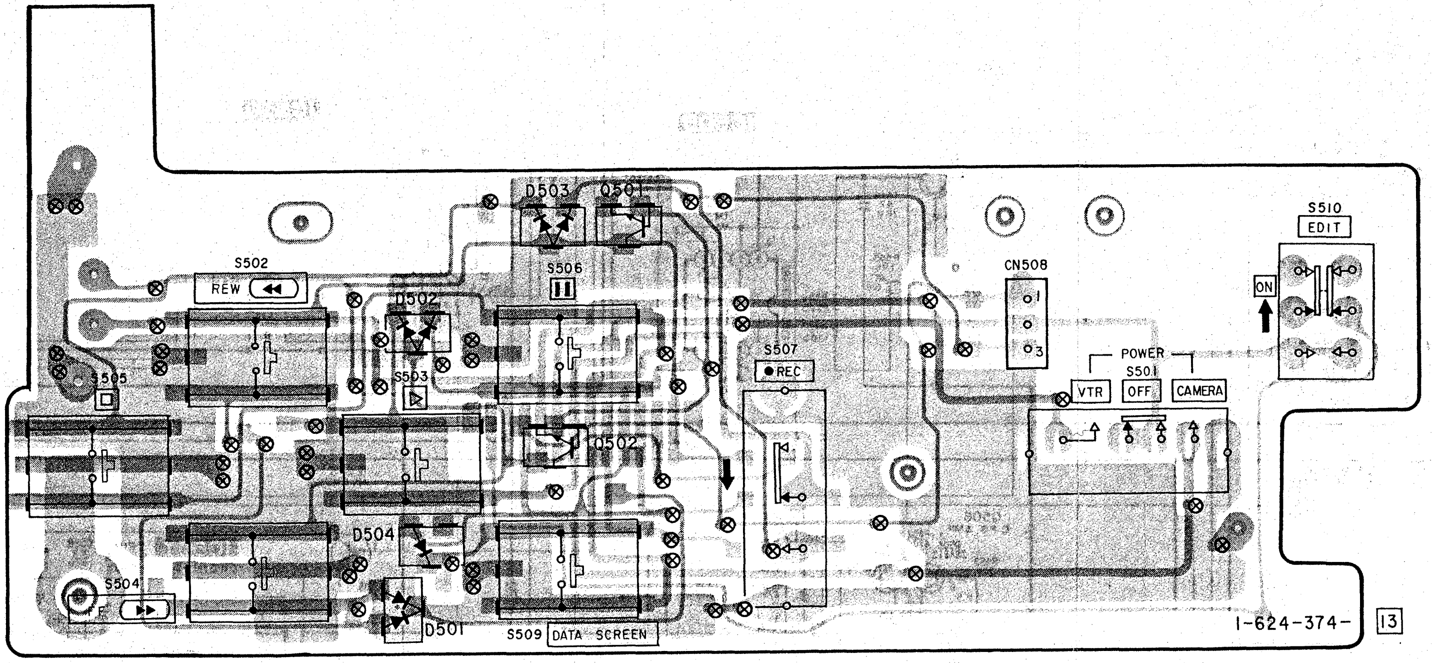

IC502
S-81350AG
5V REG
IC503
S-8054ALRS
RESET
IC501
CXP-80116
SERVO/
SYSCON
CN501
M OUT#
M OUT3
M OUT4
CC DOWN
END SENS
M IN#
GND
M IN1
T/R LED
M IN2
ME/MP
TOP SENS
5V
TAPE TOP
TAPE END
Q503
Q504,536
MATRIX INPUT
CC LOCK
SWITCH POSI
BATTERY DOWN
CN507
MIN 5
MIN 4
MIN #
M OUT 4
M OUT 2
M OUT 1
M OUT #
VTR SW
SS GND
CAM SW
EJECT
EDIT
TO
VK-1 BOARD
W507
Page 151)
Q515-517,537,538
-DEW DETECT-
DEW
CN506(WHT)
DEW SENSOR
IC505
μPC358G2
VOLTAGE ERROR AMP
IC510
μPC324G2
INTEGRATOR
Q518,539
TAPE END DETECT
Q519,540
TAPE TOP DETECT
END
TOP
Q535
INVERTER
Q506
C FG AMP
C FG SHAPER
C FG
IC506
CX20115A
WAVE SHAPER
DRUM ERROR
CAP ERROR
IC507
CX20114
DRUM MOTOR DRIVE
IC504
LB1631MT
LOADING
MOTOR
DRIVE
CN505 (RED)
LM LOAD
LM UNLOAD
M903
LOADING
MOTOR
Q624,625
SWITCH
Q626,627
PWM POWER DRIVE
Q628
PROTECTION
DETECTOR
IC621
MB3775PF
PULSE WIDTH
MODULATION
Q622,623
PWM POWER
DRIVE
Q621
SWITCH
FREQUENCY
CN503(BLK)
D FG
D PG
FG/PG COM
GND
CN504(RED)
DRUM U
DRUM V
DRUM COM
DRUM W
DRUM VS
O Signal
EC/PB
PB


IC509
CXA-1204Q
ATF SERVO PILOT
IC510
μPC324G2
⑤⑥⑦ CLOG DETECT
⑧⑨⑩ SP/LP DETECT
Q523,524
INVERTER
SP/LP
CLOG
Q525
PB RF AMP
Q526,527
ENVELOPE DETECT
Q529,530
LPF
Q528
BUFFER
IC507
CX20114
DRUM MOTOR DRIVE
Q522
STARTER
IC508
CXA 1127M
CAPSTAN MOTOR DRIVE
Q531-534
LINCS POWER SWITCH
CAP VS
MT. GND
DRUM VS
TO CO-2 BOARD (2/3) VIDEO HEAD AMP BLOCK
(See Page 135
TO CV-8 BOARD (1/3) CN502
(See Page 1
(TO CV-8)
TO CV-8 BOARD (1/3) CN501
(See Page 1
TO CO-2 BOARD (3/3) (AUDIO BLOCK)
(See Page 13
TO RC-26 BOARD CN951
(See Page 1
no mark : REC/PB mode
( ) : REC mode
〈 〉 : PB mode
CO-2 BOARD (1/3) SERVO/ SYSCON BLOCK
KS-3 BOARD
CN503(BLK)
D FG
D PG
FG/PG COM
GND
DRUM MOTOR
FG·PG
CN504(RED)
DRUM U
DRUM V
DRUM COM
DRUM W
M901 DRUM MOTOR
CN502
W502
CN501
C FG GND
C FG VCC
C FG (A)
C FG (B)
CAP W
CAP U
HE GND
VHE (+)
VHE (−)
HE VCC
UHE (+)
UHE (−)
CAP V
WHE (+)
WHE (−)
CAPSTAN MOTOR
CAPSTAN FG
M902 CAPSTAN MOTOR
N PB OUT
M RP GND
L DOC PULSE
K JOG
J REC Y
I REC AFM RF
H REC C
G RP PB MODE
F RP 5V
E REC ATF
D ME/ MP
C SP/ LP
B RF SW P
A FE ON
O VA PB MODE
W502
22 RP GND
21 RP GND
20 PB YC OUT
19 RP 5V
18 REC C
17 DOC PULSE
16 REC Y
15 SYS RESET
14 ZOOM T
13 ZOOM W
12 LINCS POWER
11 COSMO SCK
10 COSMO SO
9 COSMO SI
8 COSMO CS
7 CAM UNREG
6 DATA SCREEN
5 TALLY
4 SYNC DET
3 EVER 5V
2 RF SWP
1 VA PB MODE
W501
22 SP/ LP
21 VIDEO CS
20 JOG VD
19 VIDEO MUTE
18 COMP SYNC
17 JOG
16 STILL ADJ
15 SS GND
14 VP SAVE
13 SS 5V
12 VTR DD ON
11 MT UNREG
10 MT UNREG
9 CAM DD ON
8 MT GND
7 MT GND
6 AUDIO GND
5 AUDIO IN (Y)
4 AUDIO IN (X)
3 AUDIO OUT (Y)
2 AUDIO OUT (X)
1 AUDIO 5V
R AUDIO IN (X)
S AUDIO IN (Y)
T AUDIO OUT (X)
U AUDIO OUT (Y)
V CAM/LINE
W SP/LP
X PB AFM RF
Y RP GND
Z RF SWP
a VA PB MODE
b AUDIO MUTE
c REC AFM RF
d AUDIO 5V
e AUDIO GND
f EP OUT
g EP GND
Q MIC IN
P AUDIO GND
W951
1 START/STOP
2 CAM COM
3 CAM SW
4 S/S GND
5 ZOOM T
6 ZOOM W
7 LINCS POWER
8 LINCS DC
9 EP GND
10 EP OUT
11 AUDIO GND
12 MIC IN
13 AUDIO 5V

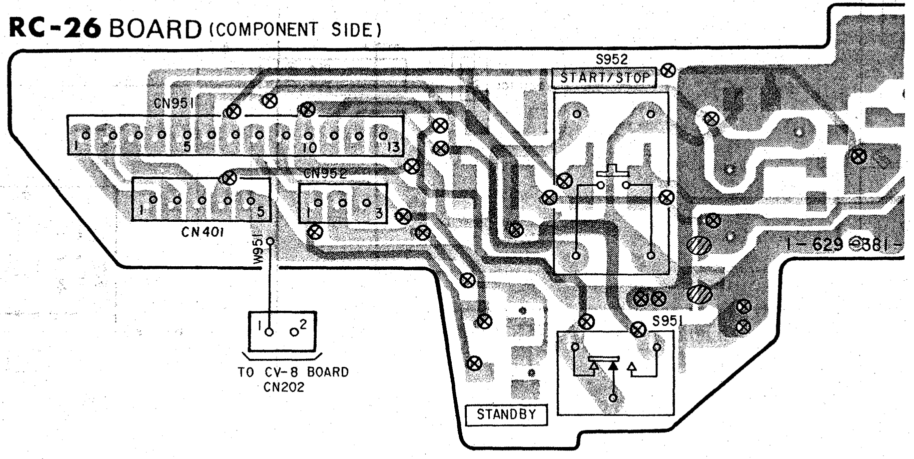
## MA-31 (MIC AMP), RC-26 (START/STOP SWITCH), VK-1 (VIDEO FUNCTION SWITCH) PRINTED WIRING BOARDS

— Ref. No. MA-31, VK-1 BOARDS : 8000 series, RC-26, BOARD : 9000 series —

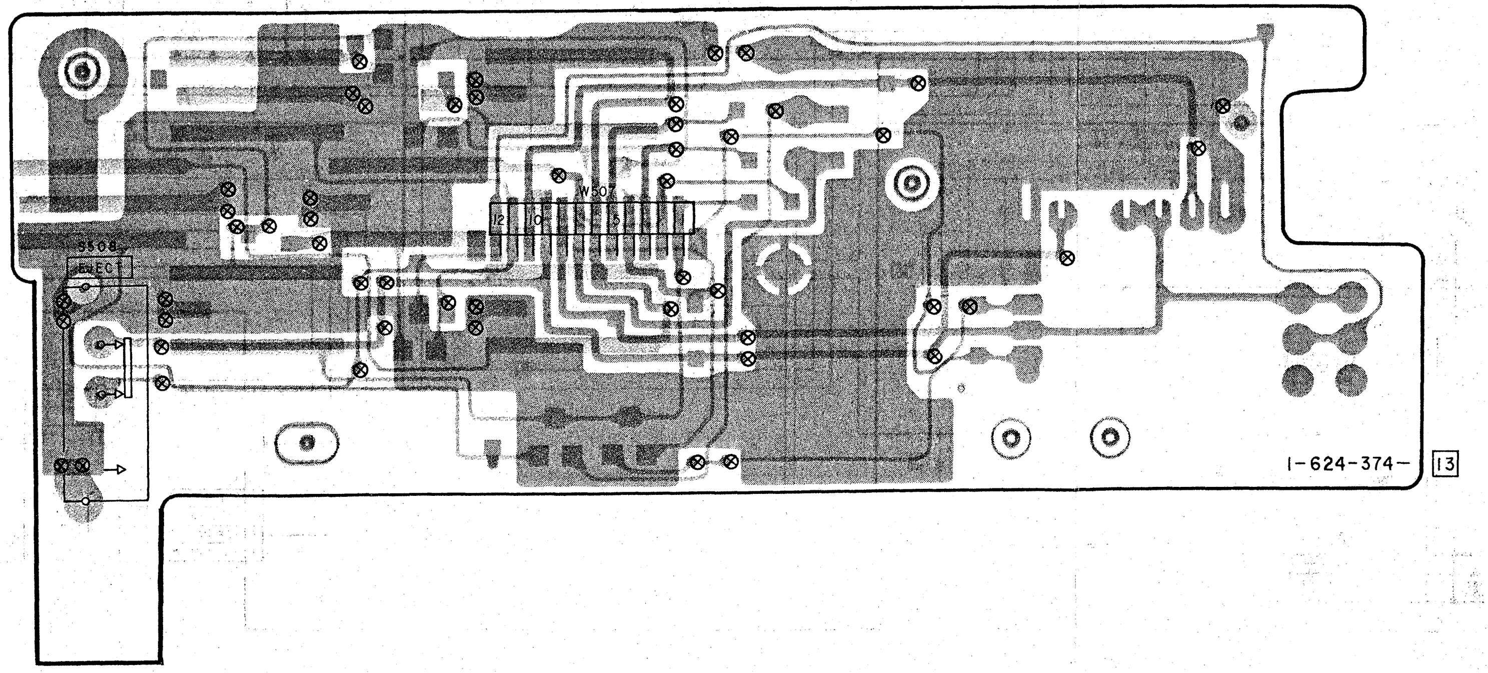
**VK-1** BOARD (COMPONENT SIDE)


D503
Q501
S502
REW
S506
D502
S503
S505
Q502
D504
S504
FF
D501
S509 DATA SCREEN
S507
● REC
CN508
1
3
POWER
S501
VTR
OFF
CAMERA
S510
EDIT
ON
1-624-374-
13

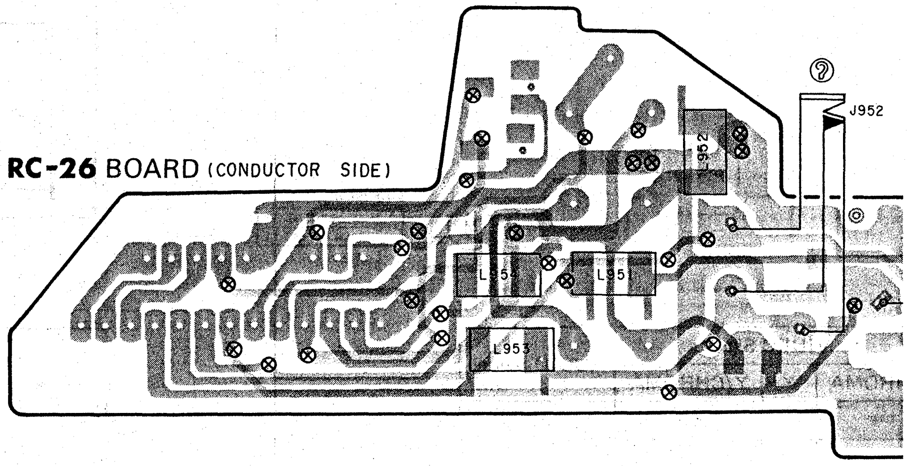
**RC-26** BOARD (COMPONENT SIDE)

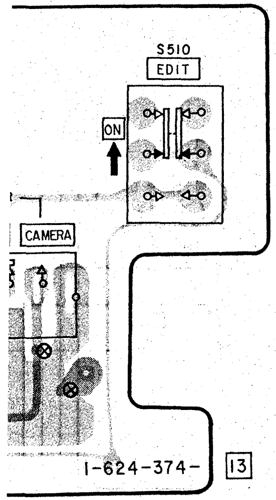

S952
START/STOP
CN951
1
5
10
13
CN952
1
3
CN401
1
5
W951
1
2
TO CV-8 BOARD
CN202
S951
STANDBY
1-629-381-

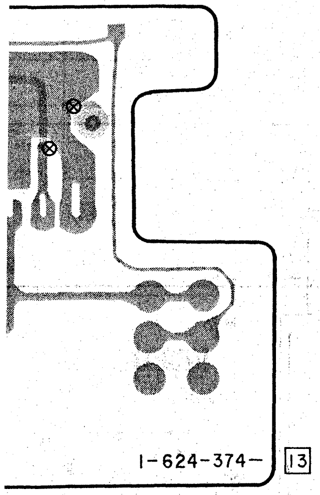
**VK-1** BOARD (CONDUCTOR SIDE)


S508
EJECT
W501
12
10
5
1
1-624-374-
13

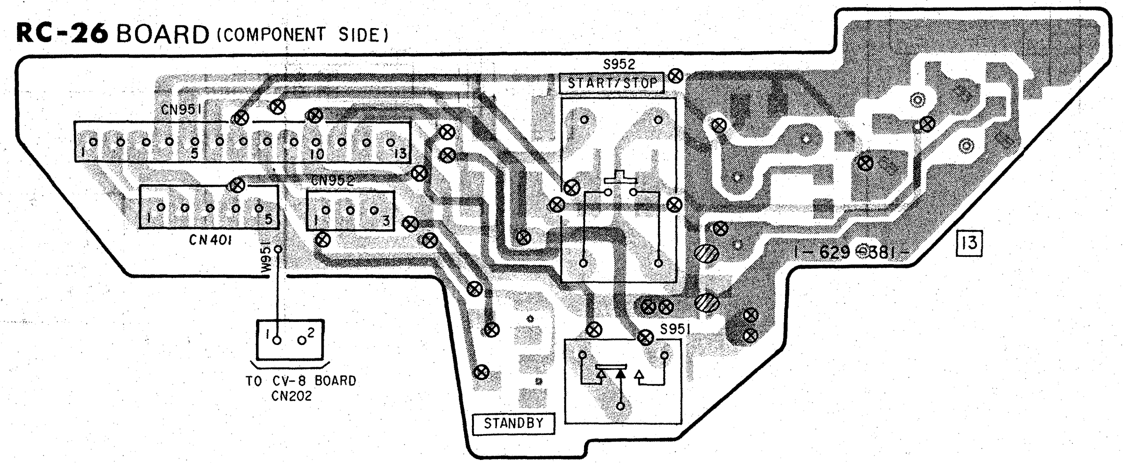
**RC-26** BOARD (CONDUCTOR SIDE)


②
J952
W952
L951
L952
L953

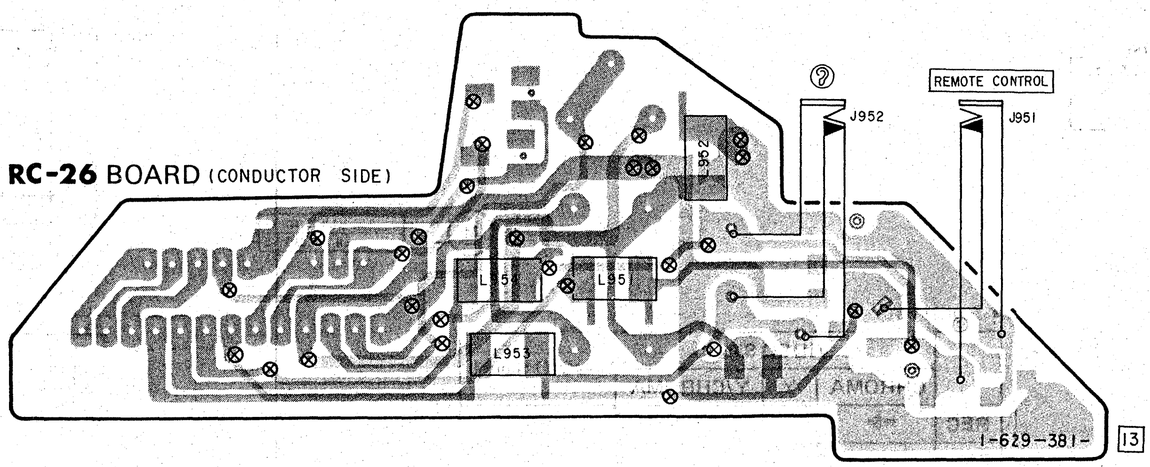

S510
EDIT
ON
CAMERA
1-624-374-
13



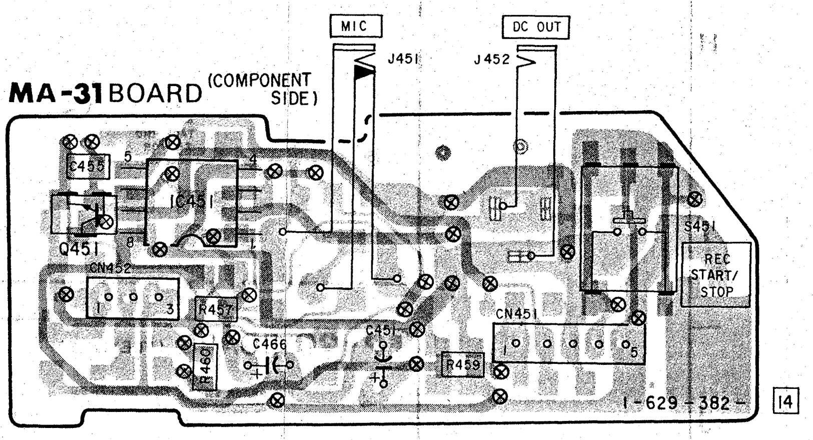
**RC-26** BOARD (COMPONENT SIDE)


S952
START/STOP
CN951
1
5
10
13
CN952
1
3
CN401
1
5
W951
1
2
TO CV-8 BOARD
CN202
S951
STANDBY
1-629-381-
13

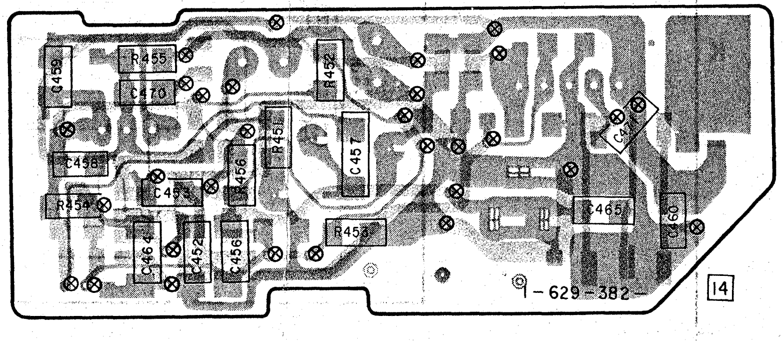
**RC-26** BOARD (CONDUCTOR SIDE)


J952
REMOTE CONTROL
J951
L951
L952
L953
1-629-381-
13

**MA-31** BOARD (COMPONENT SIDE)

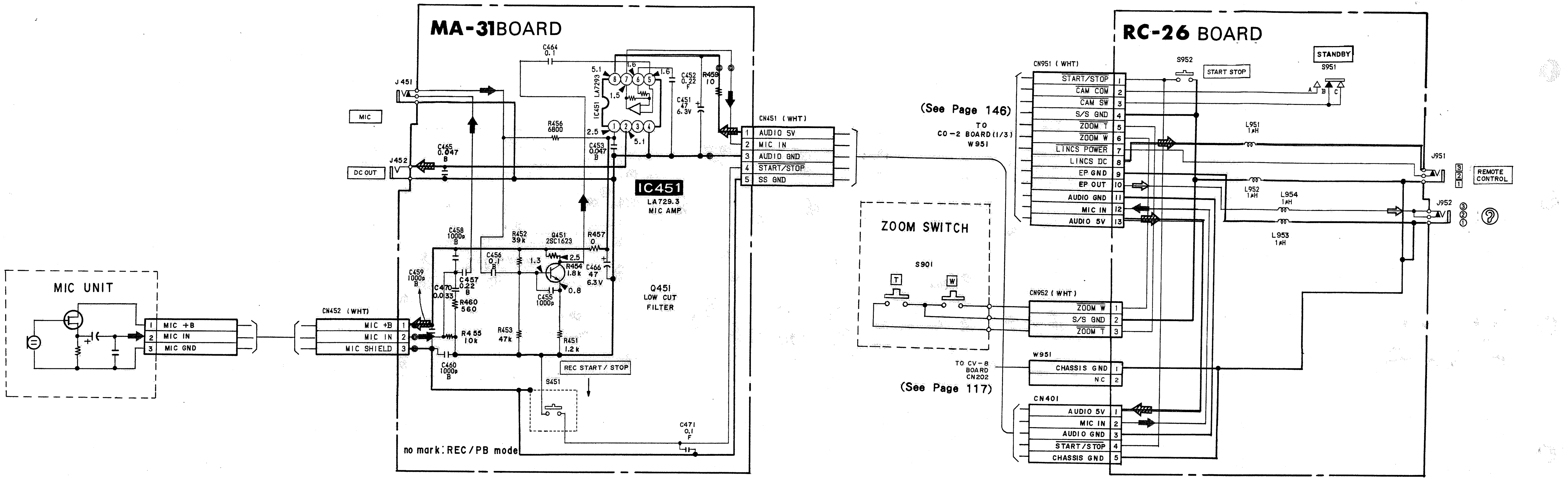

MIC
DC OUT
J451
J452
C455
IC451
5
4
8
Q451
CN452
1
3
R457
R460
C466
C451
R459
CN451
1
5
S451
REC START/STOP
1-629-382-
14

**MA-31** BOARD (CONDUCTOR SIDE)


R455
C459
C470
R452
R453
C457
C458
R454
R456
C453
C464
C452
C456
R458
C465
C460
1-629-382-
14

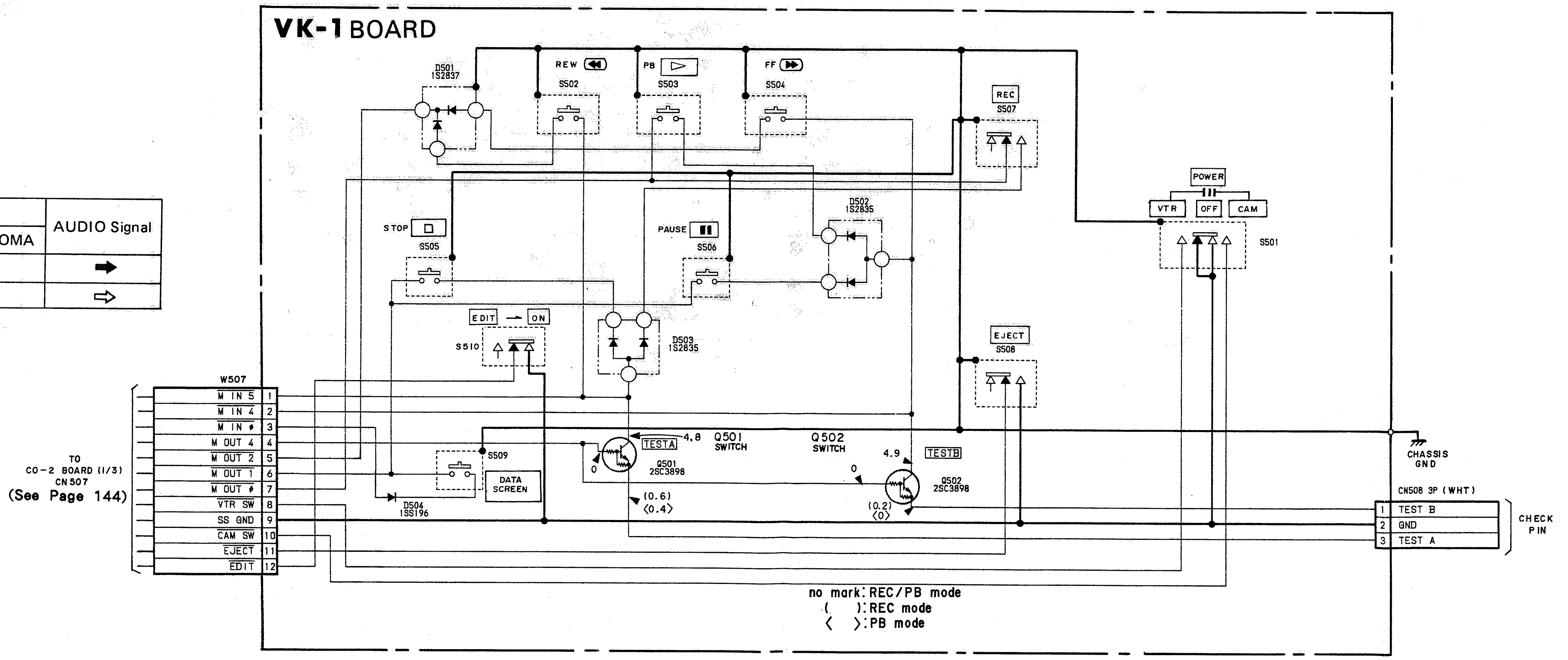
## MA-31 (MIC AMP), RC-26 (START/STOP SWITCH), VK-1 (VIDEO FUNCTION SWITCH) SCHEMATIC DIAGRAMS

— Ref. No. MA-31, VK-1 BOARDS : 8000 series, RC-26, BOARD : 9000 series —


MA-31 BOARD
MIC UNIT
MIC +B
MIC IN
MIC GND
CN452 (WHT)
MIC +B
MIC IN
MIC SHIELD
J451
MIC
J452
DC OUT
C464 0.1
C465 0.047 B
R456 6800
IC451 LA7293
C452 0.22 F
R459 10
C451 47 6.3V
C453 0.047 B
IC451
LA729.3
MIC AMP
CN451 (WHT)
AUDIO 5V
MIC IN
AUDIO GND
START/STOP
SS GND
C458 1000p B
R452 39k
Q451 2SC1623
R457 0
C456 0.1 B
R454 1.8k
C466 47 6.3V
C459 1000p B
C470 0.033
C457 0.22 B
R460 560
C455 1000p
Q451
LOW CUT
FILTER
R455 10k
R453 47k
R451 1.2k
C460 1000p B
REC START/STOP
S451
C471 0.1 F
no mark: REC/PB mode
RC-26 BOARD
CN951 (WHT)
START/STOP
CAM COM
CAM SW
S/S GND
ZOOM T
ZOOM W
LINCS POWER
LINCS DC
EP GND
EP OUT
AUDIO GND
MIC IN
AUDIO 5V
(See Page 146)
TO
CO-2 BOARD (1/3)
W951
S952
START STOP
STANDBY
S951
L951 1μH
J951
REMOTE CONTROL
L952 1μH
L954 1μH
J952
L953 1μH
ZOOM SWITCH
S901
T
W
CN952 (WHT)
ZOOM W
S/S GND
ZOOM T
W951
CHASSIS GND
NC
TO CV-8
BOARD
CN202
(See Page 117)
CN401
AUDIO 5V
MIC IN
AUDIO GND
START/STOP
CHASSIS GND

- Signal path

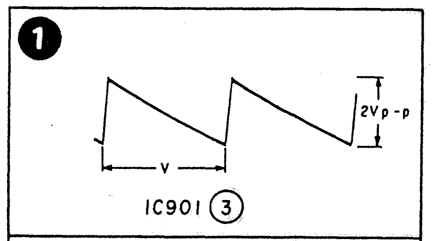
|  | VIDEO Signal |  |  | AUDIO Signal |
|---|---|---|---|---|
|  | CHROMA | Y | Y/CHROMA |  |
| REC |  |  |  | ➡ |
| PB |  |  |  | ⇨ |

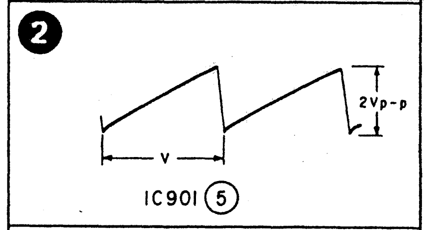

VK-1 BOARD
D501 1S2837
REW
S502
PB
S503
FF
S504
REC
S507
POWER
VTR
OFF
CAM
S501
STOP
S505
PAUSE
S506
D502 1S2835
EDIT → ON
S510
D503 1S2835
EJECT
S508
W507
M IN 5
M IN 4
M IN ϕ
M OUT 4
M OUT 2
M OUT 1
M OUT ϕ
VTR SW
SS GND
CAM SW
EJECT
EDIT
TO
CO-2 BOARD (1/3)
CN507
(See Page 144)
S509
DATA SCREEN
D504 1SS196
TESTA
Q501 SWITCH
Q501 2SC3898
(0.6)
〈0.4〉
Q502 SWITCH
TESTB
Q502 2SC3898
(0.2)
〈0〉
CHASSIS GND
CN508 3P (WHT)
TEST B
GND
TEST A
CHECK PIN
no mark: REC/PB mode
( ): REC mode
〈 〉: PB mode

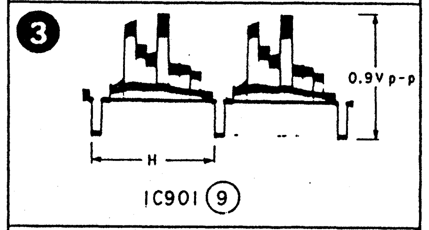
## VF-14 (ELECTRONIC VIEW FIDER), LD-13 (TALLY LED) PRINTED WIRING BOARDS

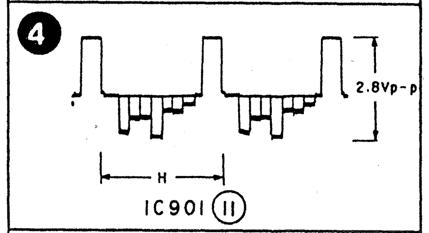
— Ref. No. VF-14 BOARD : 6000 series, LD-13 BOARD : 7000 series —

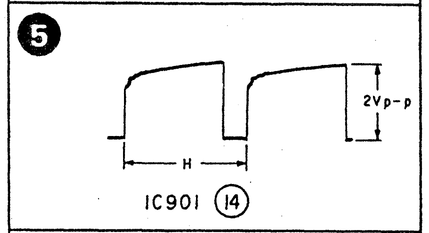
### VF-14 BOARD

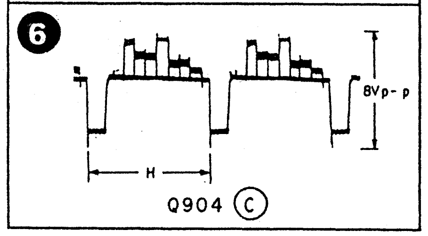




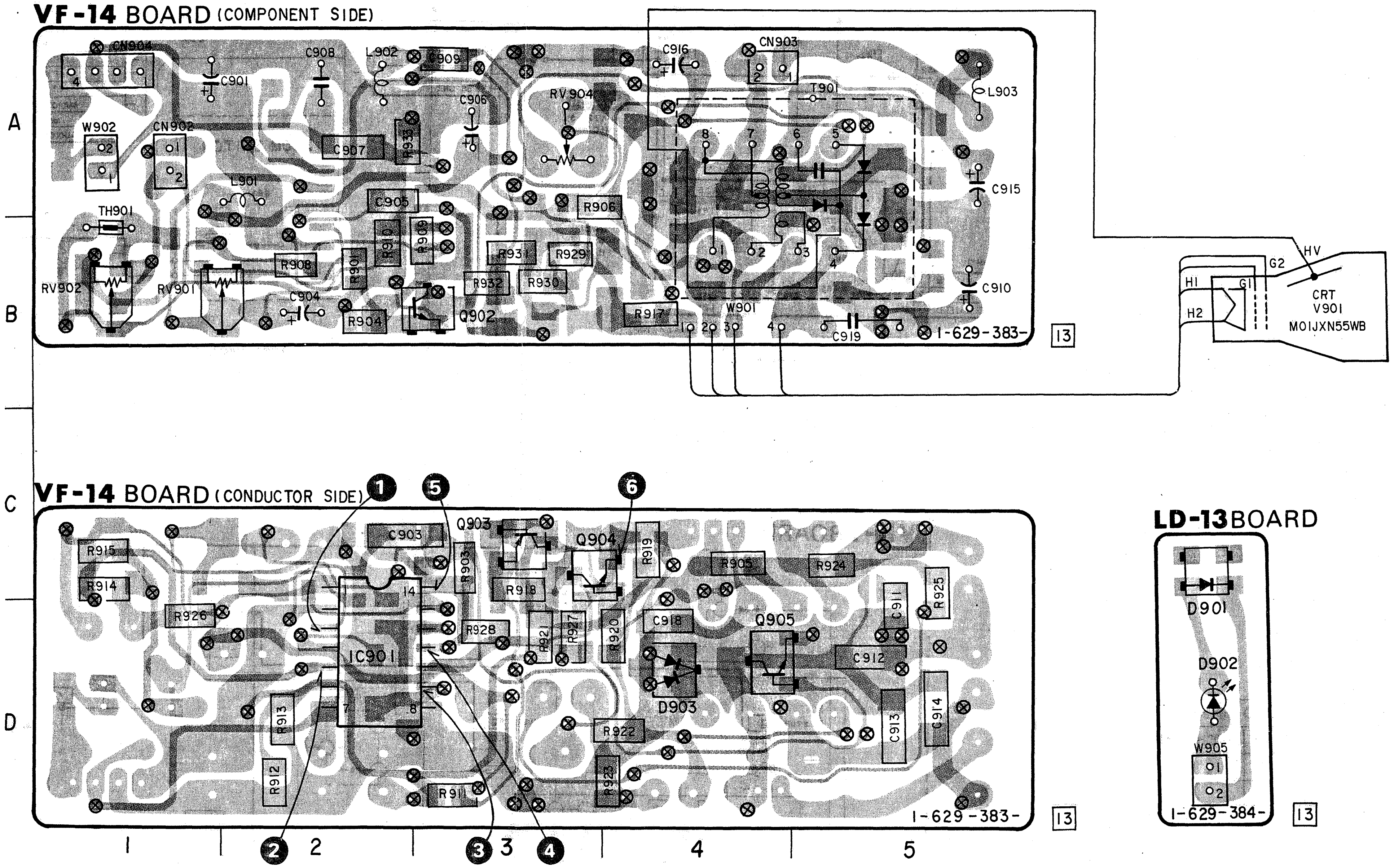








| VF-14 BOARD | |
|---|---|
| CN902 | A-1 |
| CN903 | A-4 |
| CN904 | A-1 |
| D903 | D-4 |
| IC901 | D-2 |
| Q902 | B-3 |
| Q903 | C-3 |
| Q904 | C-3 |
| Q905 | D-4 |
| RV901 | B-1 |
| RV902 | B-1 |
| RV904 | A-3 |
| W901 | B-4 |
| W902 | A-1 |

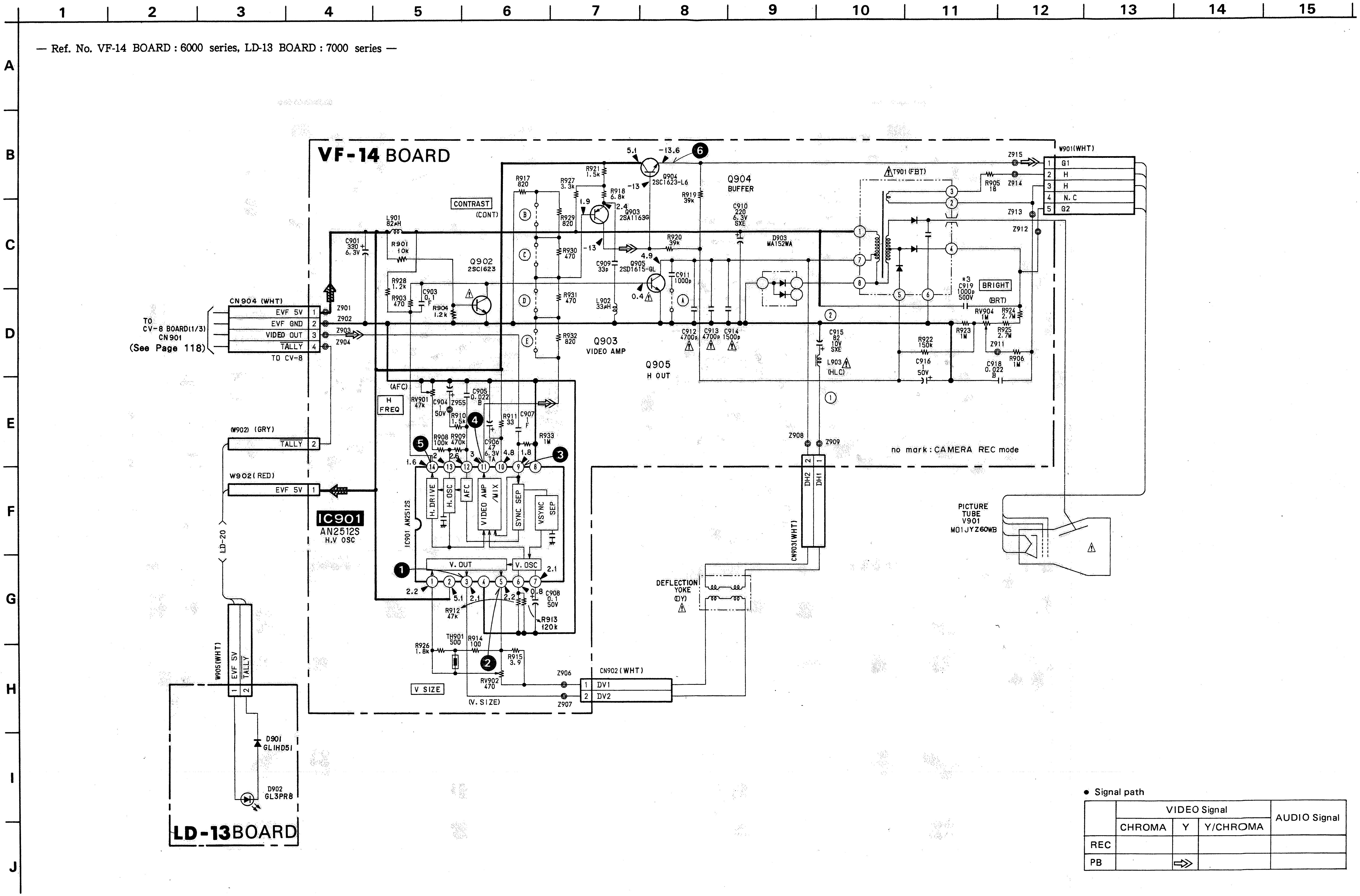

VF-14 BOARD (COMPONENT SIDE)
A
B
C
D
CN904
C901
C908
L902
Q909
C916
CN903
L903
T901
W902
CN902
C906
RV904
C907
R933
L901
C915
TH901
C905
R906
R910
R909
RV902
RV901
R908
R901
R931
R929
R932
R930
C910
C904
R904
Q902
R917
W901
C919
1-629-383-
13
HV
G2
H1
G1
H2
CRT
V901
M01JXN55WB
VF-14 BOARD (CONDUCTOR SIDE)
❶
❺
❻
R915
C903
Q903
Q904
R919
R914
R903
R918
R905
R924
R926
14
R928
R921
R927
R920
C918
Q905
C911
R925
IC901
C912
7
8
R913
D903
C913
C914
R922
R912
R911
R923
1-629-383-
13
1
2
3
4
5
❷
❸
❹

LD-13 BOARD
D901
D902
W905
1-629-384-
13

ELECTRICAL VIEW FINDER ELECTRICAL VIEW FINDER

## VF-14 (ELECTRONIC VIEW FIDER), LD-13 (TALLY LED) SCHEMATIC DIAGRAMS

— Ref. No. VF-14 BOARD : 6000 series, LD-13 BOARD : 7000 series —


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
VF-14 BOARD
LD-13 BOARD
TO CV-8 BOARD(1/3) CN901 (See Page 118)
CN904 (WHT)
EVF 5V
EVF GND
VIDEO OUT
TALLY
TO CV-8
Z901
Z902
Z903
Z904
(W902) (GRY)
TALLY
W902 (RED)
EVF 5V
LD-20
W905(WHT)
D901 GL1HD51
D902 GL3PR8
C901 330 6.3V
L901 82μH
R901 10k
R928 1.2k
R903 470
C903 0.1 F
R904 1.2k
Q902 2SC1623
CONTRAST (CONT)
R917 820
R927 3.3k
R929 820
R930 470
R931 470
R932 820
R921 1.5k
R918 6.8k
Q903 2SA1163G
Q904 2SC1623-L6
Q904 BUFFER
Q903 VIDEO AMP
Q905 2SD1615-GL
Q905 H OUT
R919 39k
R920 39k
C909 33p
C911 1000p
L902 33μH
C910 220 6.3V SXE
D903 MA152WA
C912 4700p
C913 4700p
C914 1500p
C915 82 10V SXE
L903 (HLC)
T901 (FBT)
R905 18
Z914
Z913
Z912
Z915
W901(WHT)
G1
H
H
N.C
G2
C919 1000p 500V
BRIGHT (BRT)
RV904 1M
R924 2.7M
R925 2.7M
R923 1M
R922 150k
C916 1 50V
C918 0.022 B
R906 1M
Z911
Z908
Z909
DH2
DH1
CN903(WHT)
no mark : CAMERA REC mode
PICTURE TUBE V901 M01JYZ60WB
DEFLECTION YOKE (DY)
CN902 (WHT)
DV1
DV2
Z906
Z907
(AFC)
H FREQ
RV901 47k
C904 1 50V
Z955
C905 0.022 B
R910 1.5k
R911 33
C907 1 F
R908 100k
R909 470k
C906 47 6.3V TA
R933 1M
IC901 AN2512S H.V OSC
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V.OUT
V.OSC
C908 0.1 50V
R913 120k
R912 47k
TH901 500
R914 100
R926 1.8k
R915 3.9
RV902 470
V SIZE
(V.SIZE)
5.1
-13.6
-13
1.9
2.4
-13
4.9
0.4
1.6
2.6
3
4.8
1.8
2.2
5.1
2.1
2.2
0.8
2.1

- Signal path

| | VIDEO Signal | | | AUDIO Signal |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | | | | |
| PB | | ⇨ | | |

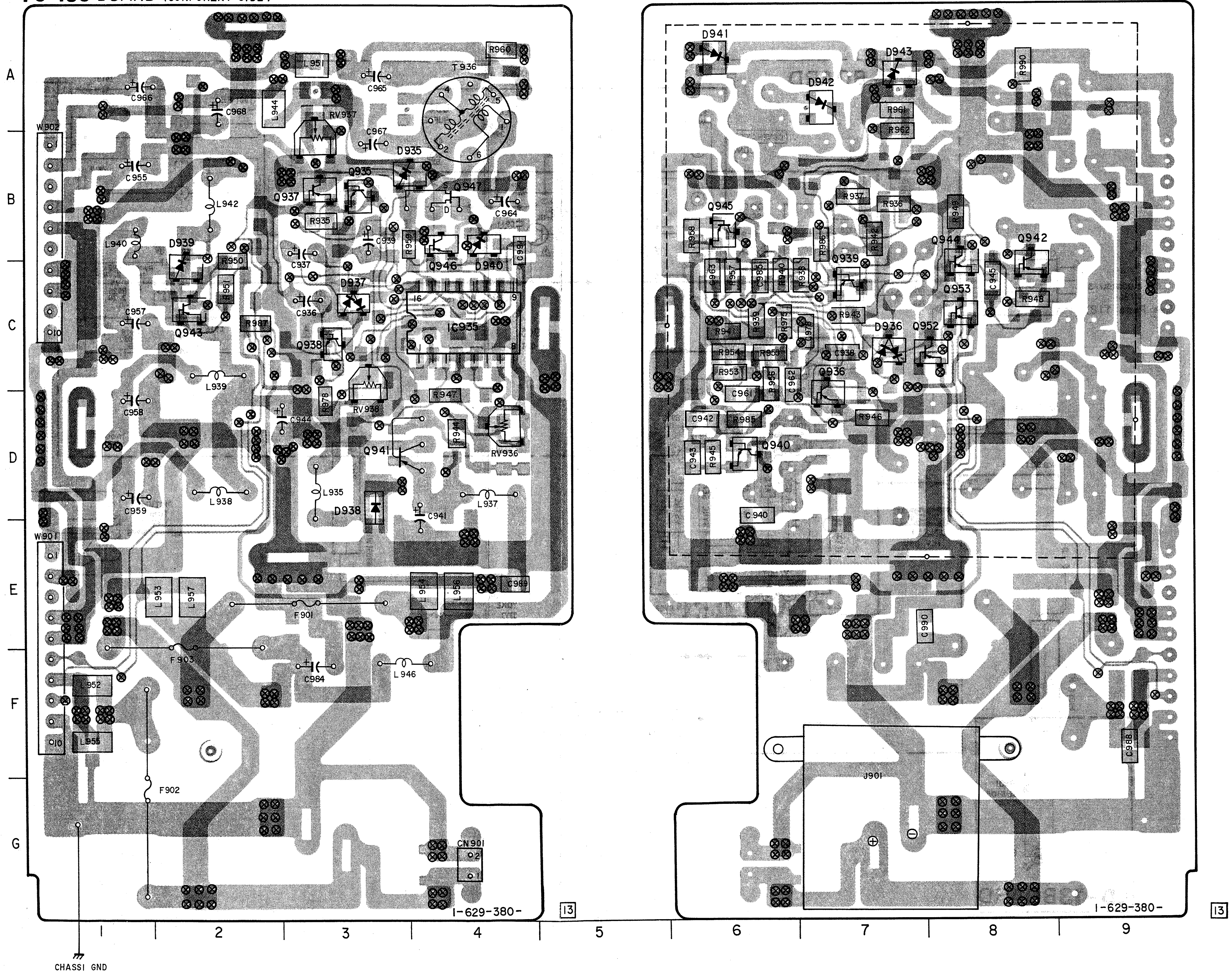
## PS-180 (POWER SUPPLY) PRINTED WIRING BOARDS

— Ref. No. PS-180 BOARD : 4000 series —

| PS-180 BOARD | |
|---|---|
| CN901 | G-4 |
| D935 | B-4 |
| D936 | C-7 |
| D937 | C-3 |
| D938 | D-3 |
| D939 | C-2 |
| D940 | C-4 |
| D941 | A-6 |
| D942 | A-7 |
| D943 | A-7 |
| IC935 | C-4 |
| Q935 | B-3 |
| Q936 | C-7 |
| Q937 | B-3 |
| Q938 | C-3 |
| Q939 | C-7 |
| Q940 | D-6 |
| Q941 | D-3 |
| Q942 | C-8 |
| Q943 | C-2 |
| Q944 | B-8 |
| Q945 | C-6 |
| Q946 | C-4 |
| Q947 | B-4 |
| Q952 | C-7 |
| Q953 | C-8 |
| RV936 | D-4 |
| RV937 | B-3 |
| RV938 | D-3 |
| W901 | E-1 |
| W902 | B-1 |

**PS-180** BOARD (CONPONENT SIDE)

**PS-180** BOARD (CONDUCTOR SIDE)


A
B
C
D
E
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G
1
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6
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8
9
W902
W901
C966
C968
L951
L944
RV937
C965
T936
R960
C967
D935
C955
L942
Q937
Q935
Q947
C964
R935
L940
D939
R950
C939
R958
Q946
D940
C937
D937
C957
C936
R961
R987
IC935
Q943
Q938
L939
C958
C944
R978
RV938
R947
R944
RV936
Q941
L935
D938
L938
C959
C941
L937
L953
L957
F901
L954
L956
C989
F903
C984
L946
L952
L955
F902
CN901
1-629-380-
13
CHASSI GND
D941
D943
D942
R961
R962
R990
R937
R936
R941
Q945
R968
R963
R957
R952
R940
R939
R956
R942
Q939
Q944
Q942
C945
Q953
R948
R943
R949
R955
R974
R973
R954
R959
C938
D936
Q952
R953
R956
C962
Q936
C961
R946
C942
R985
Q940
C943
R945
C940
C990
J901
C988
1-629-380-
13

POWER POWER

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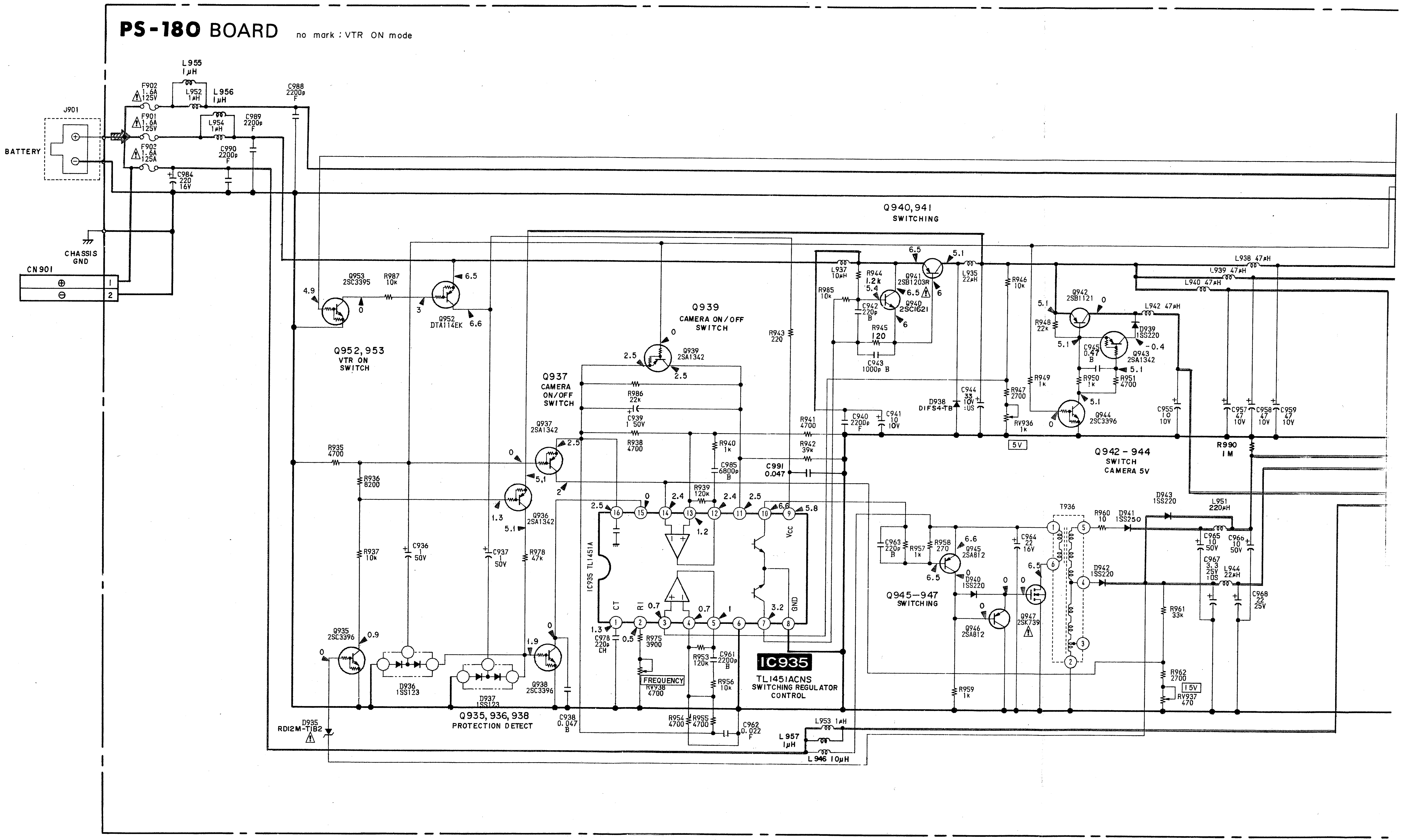
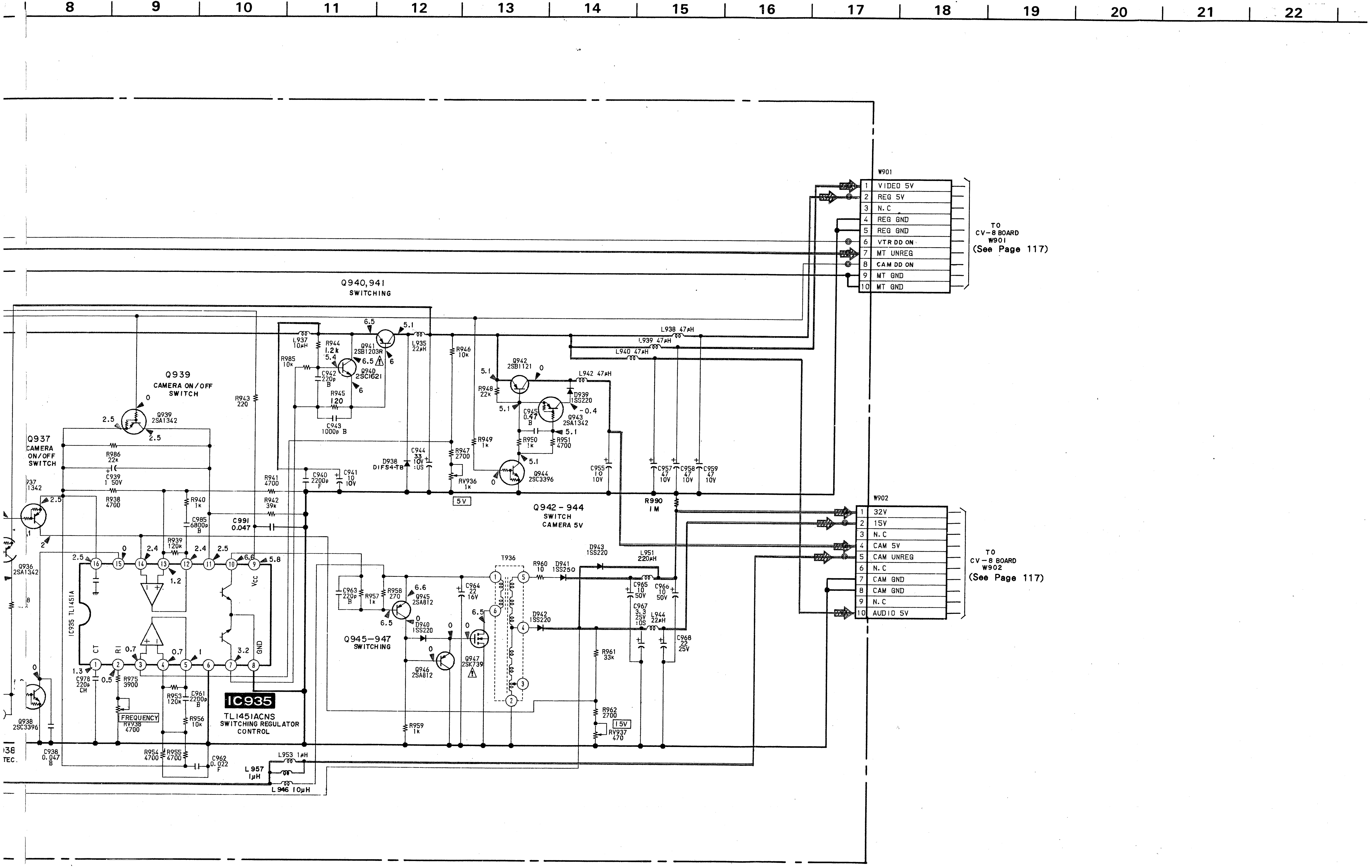
J

— Ref. No. PS-180 BOARD : 4000 series —


PS-180 BOARD
no mark : VTR ON mode
J901
BATTERY
CHASSIS GND
CN901
F902 1.6A 125V
F901 1.6A 125V
F902 1.6A 125A
L955 1μH
L952 1μH
L956 1μH
L954 1μH
C988 2200p F
C989 2200p F
C990 2200p F
C984 220 16V
Q953 2SC3395
R987 10k
Q952 DTA114EK
Q952,953 VTR ON SWITCH
Q939 CAMERA ON/OFF SWITCH
Q939 2SA1342
Q937 CAMERA ON/OFF SWITCH
Q937 2SA1342
R986 22k
C939 1 50V
R938 4700
R940 1k
C985 6800p B
R939 120k
R943 220
R941 4700
R942 39k
C991 0.047
R935 4700
R936 8200
Q936 2SA1342
R937 10k
C936 1 50V
C937 1 50V
R978 47k
Q935 2SC3396
D936 1SS123
D937 1SS123
Q938 2SC3396
Q935, 936, 938 PROTECTION DETECT
C938 0.047 B
D935 RD12M-T1B2
IC935 TL1451A
CT
RT
Vcc
GND
C978 220p CH
R975 3900
FREQUENCY RV938 4700
R953 120k
C961 2200p B
R956 10k
R954 4700
R955 4700
C962 0.022 F
IC935
TL1451ACNS SWITCHING REGULATOR CONTROL
L957 1μH
L953 1μH
L946 10μH
Q940,941 SWITCHING
L937 10μH
R985 10k
R944 1.2k
Q941 2SB1203R
Q940 2SC1621
C942 220p B
R945 120
C943 1000p B
L935 22μH
D938 DIFS4-TB
C944 33 10V :US
C940 2200p F
C941 10 10V
R946 10k
R947 2700
RV936 1k
5V
Q942 2SB1121
R948 22k
C945 0.47 B
D939 1SS220
Q943 2SA1342
R949 1k
R950 1k
R951 4700
Q944 2SC3396
Q942 - 944 SWITCH CAMERA 5V
C955 10 10V
L938 47μH
L939 47μH
L940 47μH
L942 47μH
C957 47 10V
C958 47 10V
C959 47 10V
R990 1M
C963 220p B
R957 1k
R958 270
Q945 2SA812
D940 1SS220
Q946 2SA812
Q947 2SK739
Q945–947 SWITCHING
C964 22 16V
R959 1k
T936
R960 10
D941 1SS250
D942 1SS220
D943 1SS220
L951 220μH
C965 10 50V
C966 10 50V
C967 3.3 25V :US
L944 22μH
C968 22 25V
R961 33k
R962 2700
15V
RV937 470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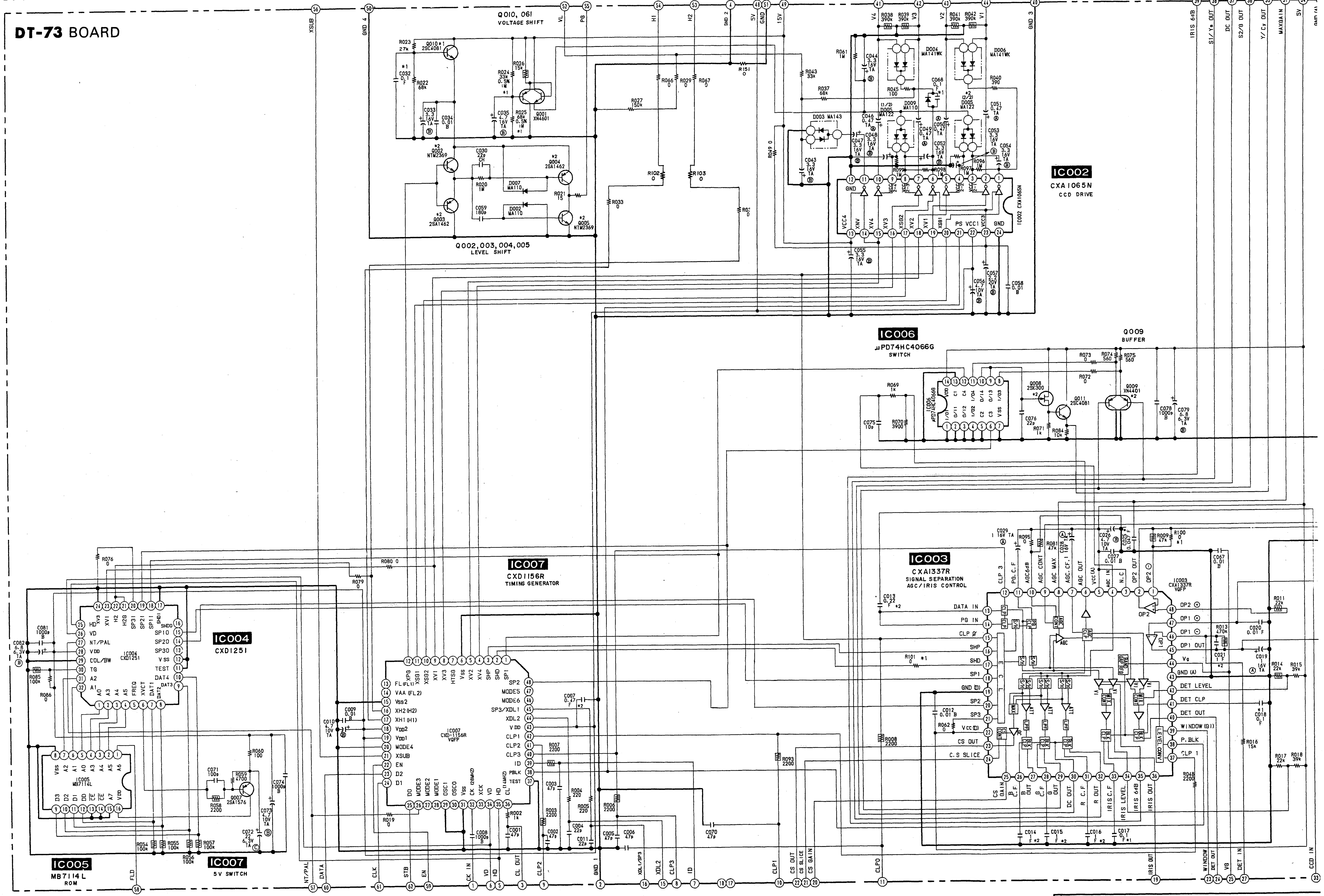
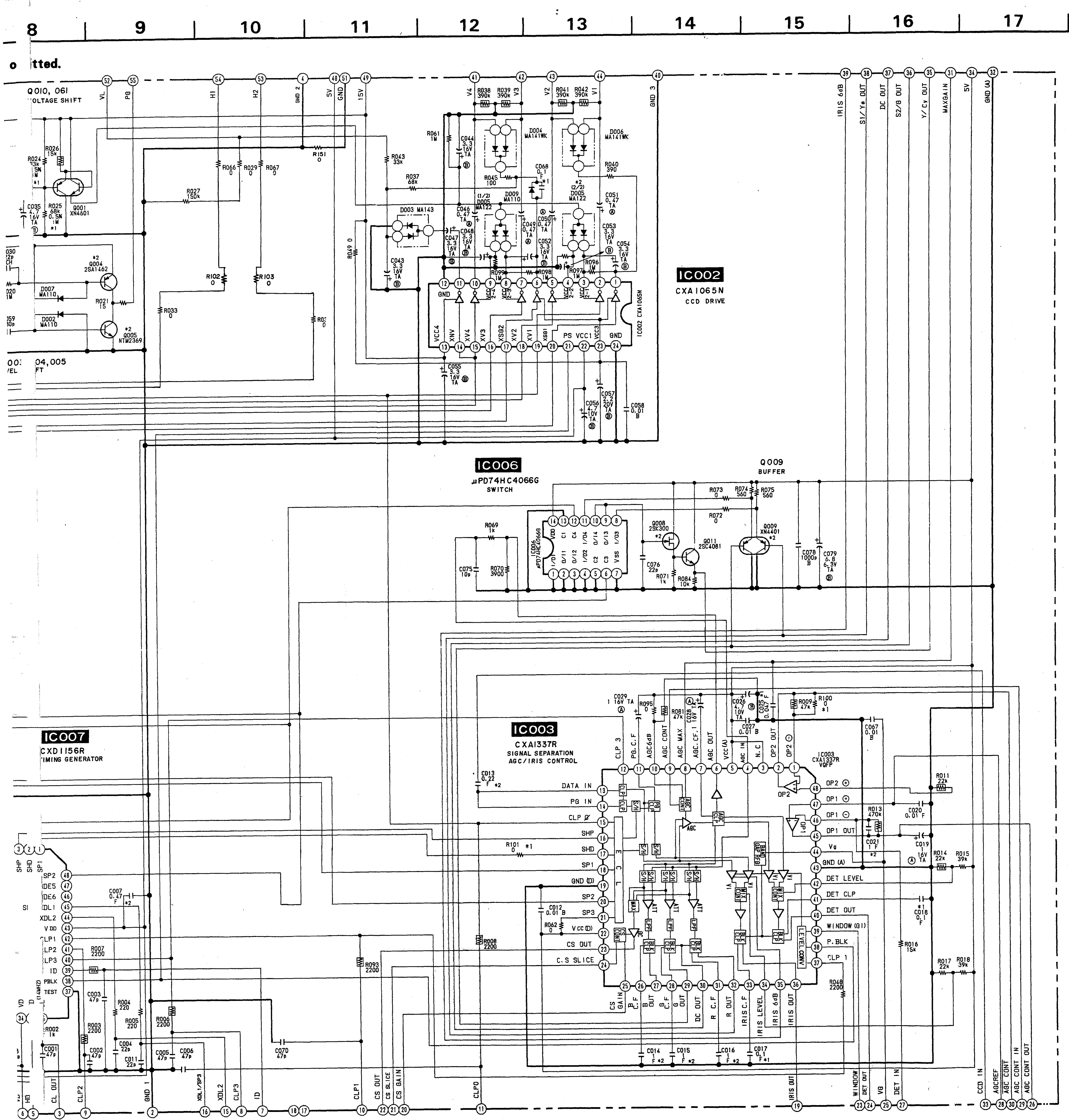
W901
1 VIDEO 5V
2 REG 5V
3 N.C
4 REG GND
5 REG GND
6 VTR DD ON
7 MT UNREG
8 CAM DD ON
9 MT GND
10 MT GND
TO CV-8 BOARD W901 (See Page 117)
W902
1 32V
2 15V
3 N.C
4 CAM 5V
5 CAM UNREG
6 N.C
7 CAM GND
8 CAM GND
9 N.C
10 AUDIO 5V
TO CV-8 BOARD W902 (See Page 117)
Q940,941 SWITCHING
Q939 CAMERA ON/OFF SWITCH
Q939 2SA1342
Q937 CAMERA ON/OFF SWITCH
Q936 2SA1342
Q938 2SC3396
Q941 2SB1203R
Q940 2SC1621
Q942 2SB1121
Q943 2SA1342
Q944 2SC3396
Q942-944 SWITCH CAMERA 5V
Q945-947 SWITCHING
Q945 2SA812
Q946 2SA812
Q947 2SK739
D938 DIFS4-TB
D939 1SS220
D940 1SS220
D941 1SS250
D942 1SS220
D943 1SS220
T936
L935 22μH
L937 10μH
L938 47μH
L939 47μH
L940 47μH
L942 47μH
L944 22μH
L946 10μH
L951 220μH
L953 1μH
L957 1μH
R938 4700
R939 120k
R940 1k
R941 4700
R942 39k
R943 220
R944 1.2k
R945 120
R946 10k
R947 2700
R948 22k
R949 1k
R950 1k
R951 4700
R953 120k
R954 4700
R955 4700
R956 10k
R957 1k
R958 270
R959 1k
R960 10
R961 33k
R962 2700
R975 3900
R985 10k
R986 22k
R990 1M
RV936 1k
RV937 470
RV938 4700
FREQUENCY
C938 0.047 B
C939 1 50V
C940 2200p F
C941 10 10V
C942 220p B
C943 1000p B
C944 33 10V :US
C945 0.47 B
C955 10 10V
C957 47 10V
C958 47 10V
C959 47 10V
C961 2200p B
C962 0.022 F
C963 220p B
C964 22 16V
C965 10 50V
C966 10 50V
C967 3.3 25V :US
C968 22 25V
C978 220p CH
C985 6800p B
C991 0.047
5V
15V
IC935 TL1451A
IC935
TL1451ACNS SWITCHING REGULATOR CONTROL
Vcc
GND
CT
RT

## DT-73 (CCD DRIVE, TIMING GENERATOR) SCHEMATIC DIAGRAMS

DT-73 board is replaced as a block, so that the PRINTED WIRING BOARD of it is omitted.


DT-73 BOARD
Q010, 061 VOLTAGE SHIFT
Q002, 003, 004, 005 LEVEL SHIFT
IC002 CXA1065N CCD DRIVE
IC006 μPD74HC4066G SWITCH
Q009 BUFFER
IC003 CXA1337R SIGNAL SEPARATION AGC/IRIS CONTROL
IC007 CXD1156R TIMING GENERATOR
IC004 CXD1251
IC005 MB7114L ROM
IC007 5V SWITCH
XSUB
GND 4
VL
PB
H1
H2
GND 2
5V
GND
15V
V4
V3
V2
V1
GND 3
IRIS 6dB
S1/Y+ OUT
DC OUT
S2/B OUT
Y/Cy OUT
MAXGAIN
5V
FLD
NT/PAL
DATA
CLK
STB
EN
CK IN
VD
HD
CL OUT
CLP2
GND 1
XDL1/SP3
XDL2
CLP3
ID
CLP1
CS OUT
CS SLICE
CS GAIN
CLP0
IRIS OUT
WINDOW
DET OUT
VG
DET IN
CCD IN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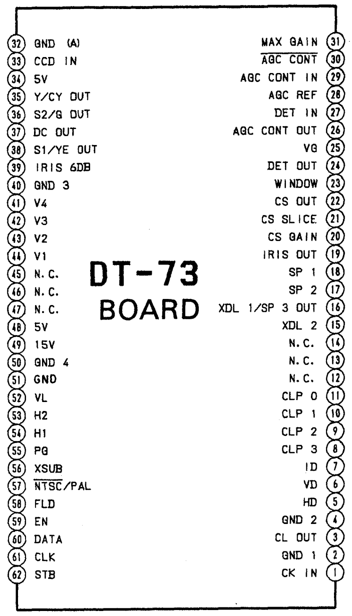
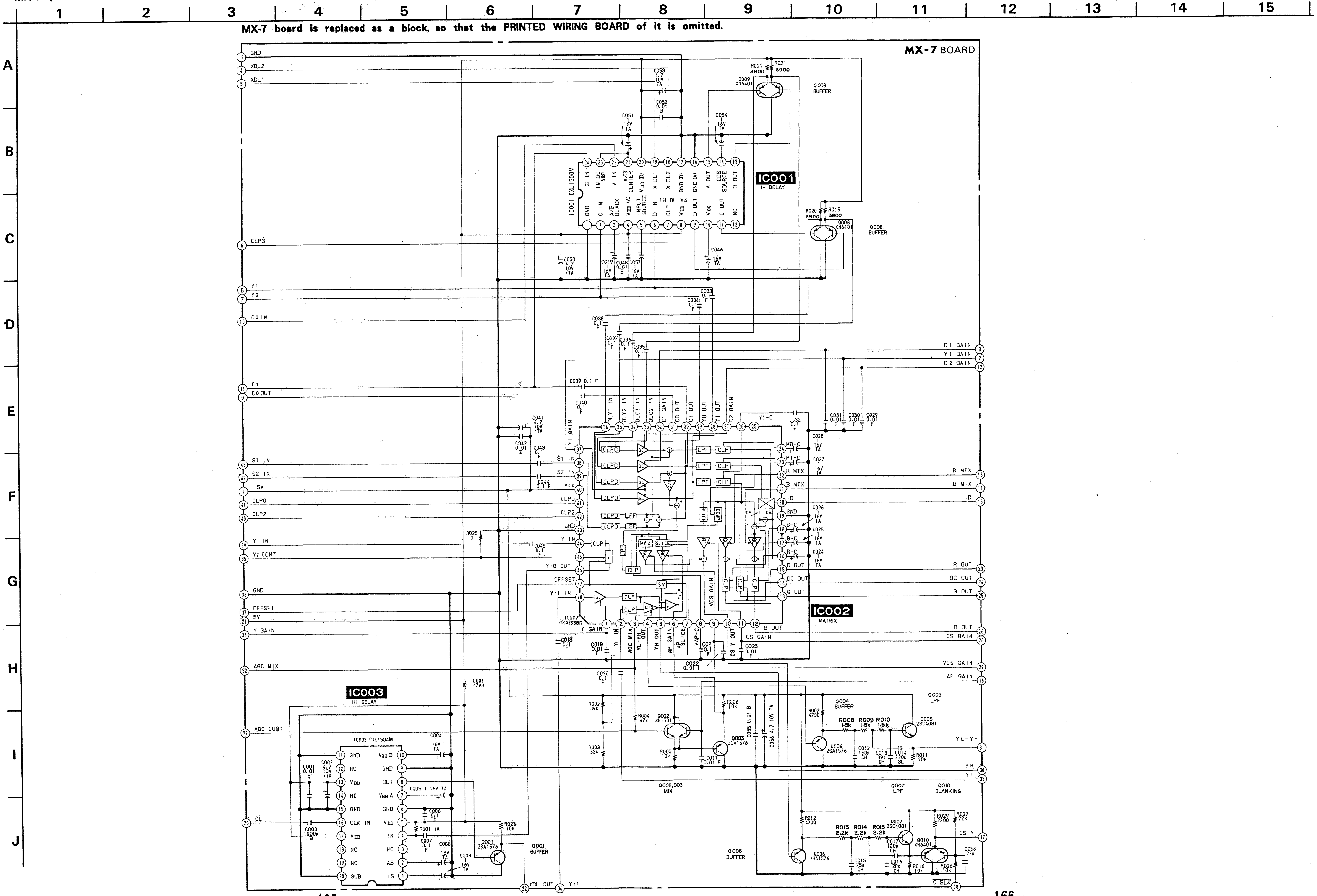
o itted.
Q010, 061
VOLTAGE SHIFT
IC002
CXA1065N
CCD DRIVE
IC006
μPD74HC4066G
SWITCH
Q009
BUFFER
Q008
2SK300
Q011
2SC4081
Q009
XN4401
IC007
CXD1156R
TIMING GENERATOR
IC003
CXA1337R
SIGNAL SEPARATION
AGC/IRIS CONTROL
D003 MA143
D004 MA141WK
D006 MA141WK
D009 MA110
D005 MA122
Q001 XN4601
Q004 2SA1462
Q005 NTM2369
D007 MA110
D002 MA110
IRIS 6dB
S1/Ye OUT
DC OUT
S2/G OUT
Y/Cy OUT
MAXGAIN
5V
GND (A)
V4
V3
V2
V1
GND 3
H1
H2
GND 2
5V
GND
15V
VL
PG
DATA IN
PG IN
CLP Ø
SHP
SHD
SP1
GND (D)
SP2
SP3
VCC (D)
CS OUT
C.S SLICE
OP2 ⊕
OP1 ⊕
OP1 ⊖
OP1 OUT
Vg
GND (A)
DET LEVEL
DET CLP
DET OUT
WINDOW (31)
P.BLK
CLP 1
CS GAIN
DC OUT
IRIS LEVEL
IRIS OUT
CCD IN
AGCREF
AGC CONT IN
AGC CONT OUT
WINDOW
DET OUT
VG
DET IN
CL OUT
CLP2
GND 1
XDL1/SP3
XDL2
CLP3
ID
CLP1
CS OUT
CS SLICE
CS GAIN
CLP0
HD
VD


DT-73
BOARD
(32) GND (A)
(33) CCD IN
(34) 5V
(35) Y/CY OUT
(36) S2/G OUT
(37) DC OUT
(38) S1/YE OUT
(39) IRIS 6DB
(40) GND 3
(41) V4
(42) V3
(43) V2
(44) V1
(45) N. C.
(46) N. C.
(47) N. C.
(48) 5V
(49) 15V
(50) GND 4
(51) GND
(52) VL
(53) H2
(54) H1
(55) PG
(56) XSUB
(57) NTSC/PAL
(58) FLD
(59) EN
(60) DATA
(61) CLK
(62) STB
MAX GAIN ㉛
AGC CONT ㉚
AGC CONT IN ㉙
AGC REF ㉘
DET IN ㉗
AGC CONT OUT ㉖
VG ㉕
DET OUT ㉔
WINDOW ㉓
CS OUT ㉒
CS SLICE ㉑
CS GAIN ⑳
IRIS OUT ⑲
SP 1 ⑱
SP 2 ⑰
XDL 1/SP 3 OUT ⑯
XDL 2 ⑮
N. C. ⑭
N. C. ⑬
N. C. ⑫
CLP 0 ⑪
CLP 1 ⑩
CLP 2 ⑨
CLP 3 ⑧
ID ⑦
VD ⑥
HD ⑤
GND 2 ④
CL OUT ③
GND 1 ②
CK IN ①

## MX-7 (CAMERA SIGNAL MATRIX) SCHEMATIC DIAGRAMS

MX-7 board is replaced as a block, so that the PRINTED WIRING BOARD of it is omitted.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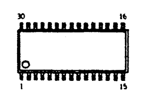
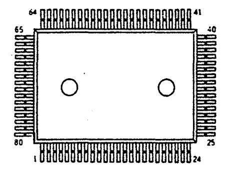
14
15
A
B
C
D
E
F
G
H
I
J
MX-7 BOARD
GND
XDL2
XDL1
CLP3
Y1
Y0
C0 IN
C1
C0 OUT
S1 IN
S2 IN
5V
CLP0
CLP2
Y IN
Yr CONT
GND
OFFSET
5V
Y GAIN
AGC MIX
AGC CONT
CL
VDL OUT
Yr1
C1 GAIN
Y1 GAIN
C2 GAIN
R MTX
B MTX
ID
R OUT
DC OUT
G OUT
B OUT
CS GAIN
VCS GAIN
AP GAIN
YL-YH
YH
YL
CS Y
C BLK
IC001
1H DELAY
IC001 CXL1503M
1H DL X4
B IN
IN DC A/B
A IN
A/B CENTER
VDD (D)
X DL1
X DL2
GND (D)
GND (A)
A OUT
CDS SOURCE
B OUT
GND
C IN
A/B BLACK
VDD (A)
INPUT SOURCE
D IN
CLP
VDD
D OUT
VBB
C OUT
NC
IC002
MATRIX
IC002 CXA1338R
DLY1 IN
DLY2 IN
DLC1 IN
DLC2 IN
C1 GAIN
C0 OUT
C1 OUT
Y0 OUT
Y1 OUT
C2 GAIN
Y1-C
Y1 GAIN
M0-C
M1-C
GND
B-C
G-C
R-C
VCS GAIN
Vcc
Y/O OUT
Yr1 IN
Y GAIN
YL IN
AGC MIX
YL-YH OUT
YH OUT
AP GAIN
AP SLICE
VAP-C
CS Y OUT
LPF
CLP
MAX
SLICE
SW
MIX
CR
CB
IC003
1H DELAY
IC003 CXL1504M
VBB B
VBB A
VDD
CLK IN
OUT
IN
AB
IS
NC
SUB
Q001 BUFFER
Q002,003 MIX
Q004 BUFFER
Q005 LPF
Q006 BUFFER
Q007 LPF
Q008 BUFFER
Q009 BUFFER
Q010 BLANKING
Q001 2SA1576
Q002 XN1501
Q003 2SA1576
Q004 2SA1576
Q005 2SC4081
Q006 2SA1576
Q007 2SC4081
Q008 XN6401
Q009 XN6401
Q010 XN6401
R019 3900
R020 3900
R021 3900
R022 3900
R001 1M
R002 39k
R003 33k
R004 47k
R005 10k
R006 10k
R007 4700
R008 1.5k
R009 1.5k
R010 1.5k
R011 10k
R012 4700
R013 2.2k
R014 2.2k
R015 2.2k
R016 10k
R023 10k
R025 0
R026 10k
R027 22k
R029 2200
L001 47μH
C001 0.01 B
C002 4.7 10V TA
C003 1000p B
C004 1 16V TA
C005 1 16V TA
C006 0.1 F
C007 0.1 F
C008 1 16V TA
C009 1 16V TA
C011 0.01 F
C012 150p CH
C013 39p CH
C014 220p SL
C015 75p CH
C016 20p CH
C017 120p CH
C018 0.1 F
C019 0.01 F
C020 0.1 F
C021 0.1 F
C022 0.01 F
C023 0.01 F
C024 1 16V TA
C025 1 16V TA
C026 1 16V TA
C027 1 16V TA
C028 1 16V TA
C029 0.01 F
C030 0.01 F
C031 0.01 F
C032 0.1 F
C033 0.1 F
C034 0.1 F
C035 0.1 F
C036 0.1 F
C037 0.1 F
C038 0.1 F
C039 0.1 F
C040 0.1 F
C041 4.7 10V TA
C042 0.01 B
C043 0.1 F
C044 0.1 F
C045 0.1 F
C046 1 16V TA
C047 1 16V TA
C048 0.01 B
C049 1 16V TA
C050 4.7 10V TA
C051 1 16V TA
C052 0.01 B
C053 4.7 10V TA
C054 1 16V TA
C055 0.01 B
C056 4.7 10V TA
C058 22p

## 4-3. SEMICONDUCTORS

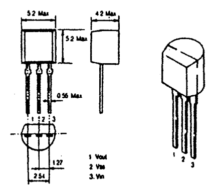
**CXA1127MT**
**CXL1501M**



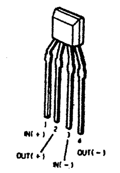
**CXP80116-090Q**



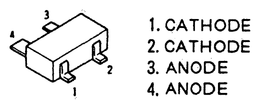
**S-81350AG**



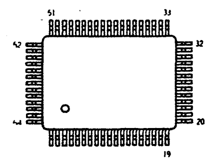
**1SS196**



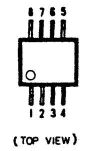
**DWA010**



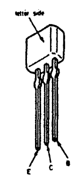
**CXA1200BQ**



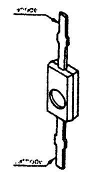
**LA7293M**
**TK10500M**



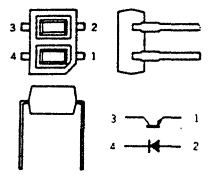
**2SA1175**



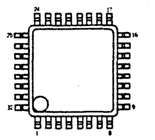
**1T32**



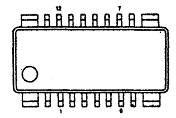
**TLP907**



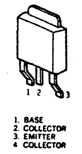
**CXA1201Q**



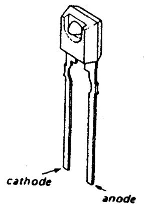
**LB1631MT**



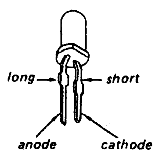
**2SA1341**
**2SB1040A**



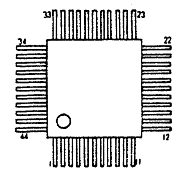
**EE-TP109**



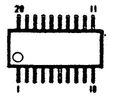
**GL3PR8**



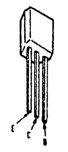
**CXA1204Q**



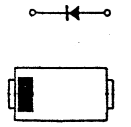
**MB88341PFV**



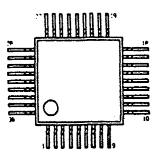
**2SA1344**



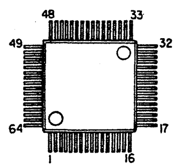
**D1FS4-TB**



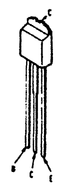
**CXA1339R**



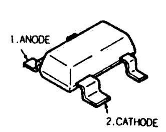
**MC68HC05C4-SC463717**



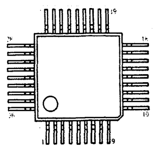
**2SB1203**



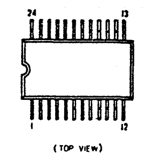
**GL-1HD51**



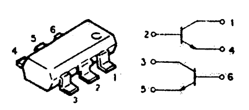
**CXD1159Q**



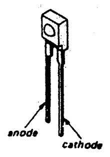
**MSM6219GS-VK**



**XN6501**



**GL452S**



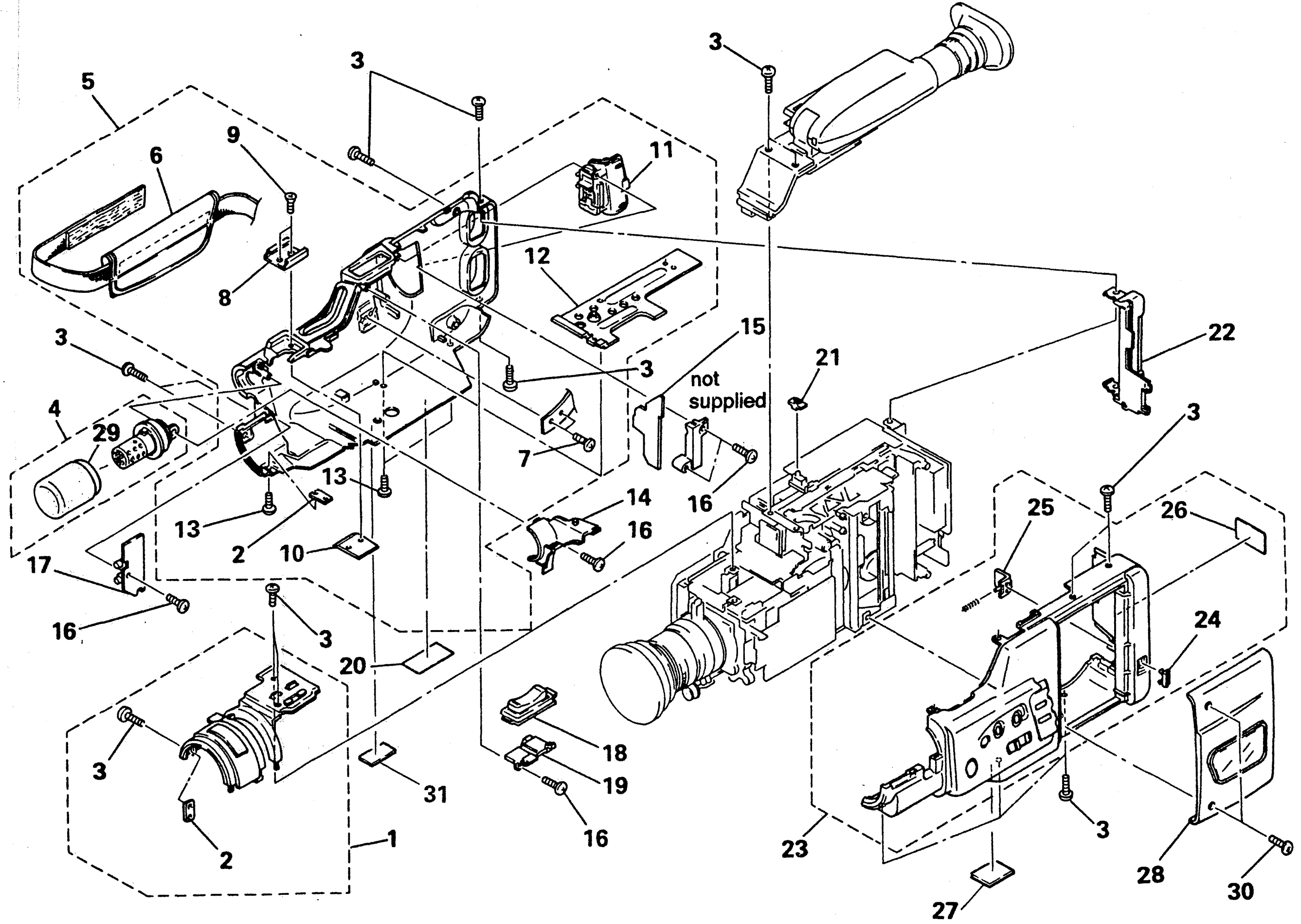
## SECTION 5
## EXPLODED VIEWS

NOTE:
- –XX, –X mean standardized parts, so they may have some differences from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

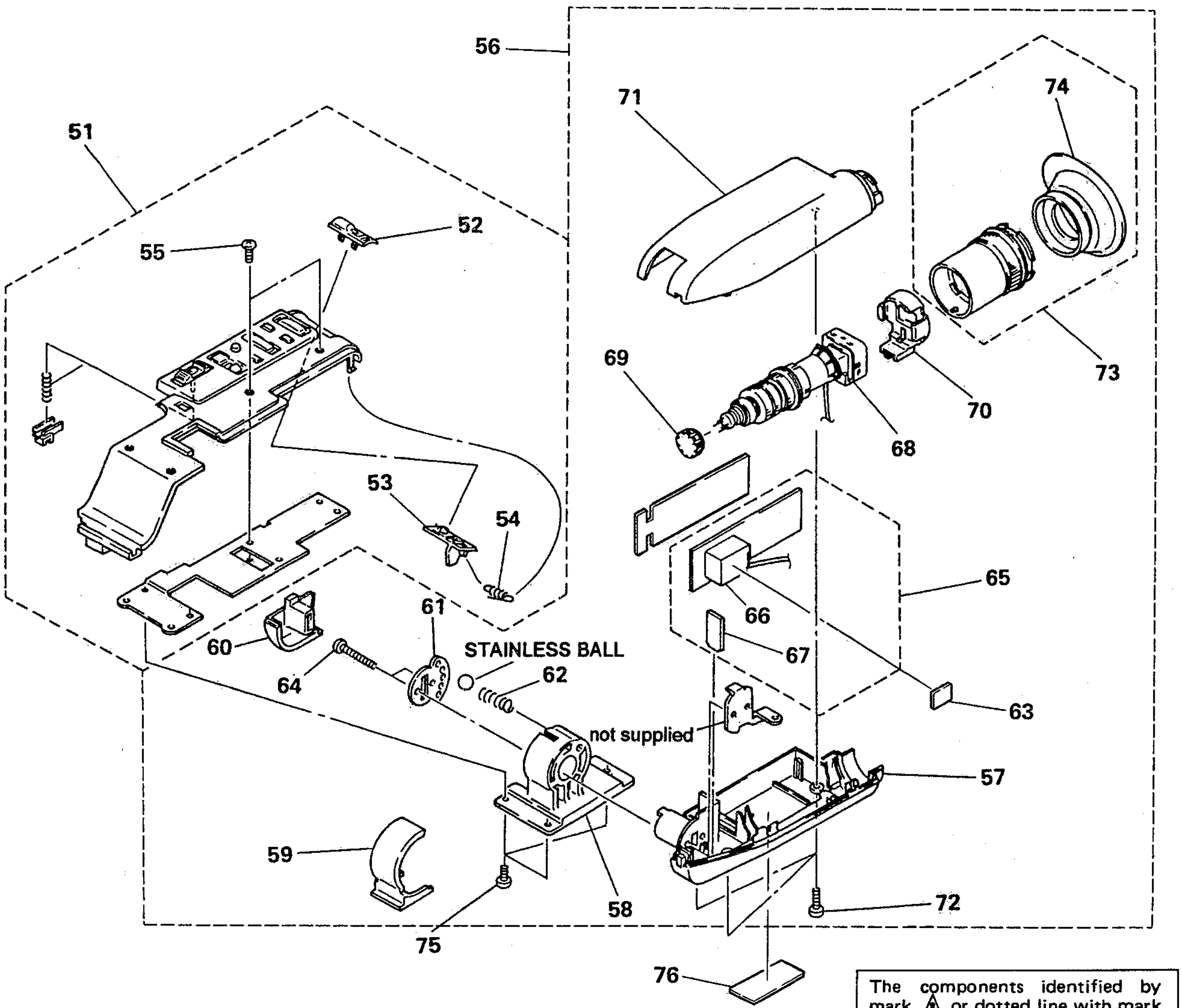
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

### 5-1. CABINET (R, L) ASSEMBLY



| No. | Part No. | Description | Remark |
|---|---|---|---|
| 1 | X-3732-951-1 | CABINET (FRONT) ASSY (CCD-F35/F280) | 2, 3 |
|  | X-3732-968-1 | CABINET (FRONT) ASSY (CCD-F36) | 2, 3 |
| 2 | 3-732-912-01 | JOINT, L/R |  |
| 3 | 3-719-381-01 | SCREW (M2X4) |  |
| 4 | 1-542-101-11 | MICROPHONE (C-2020) | 29 |
| 5 | X-3732-948-1 | CABINET (LEFT) BLOCK ASSY (CCD-F35/F280) | 2, 6-13 |
|  | X-3732-958-1 | CABINET (LEFT) BLOCK ASSY (CCD-F36) | 2, 6-13 |
| 6 | 3-719-323-01 | BELT, GRIP |  |
| 7 | 3-669-480-21 | + PTPWH 2 |  |
| 8 | 3-724-511-01 | SHOE, ACCESSORY |  |
| 9 | 3-713-787-01 | SCREW (M2X4) |  |
| 10 | 3-732-914-01 | RETAINER, SHOE |  |
| 11 | X-3732-953-1 | KNOB ASSY, SP |  |
| 12 | *3-732-911-01 | SHEET METAL, TRIPOD |  |
| 13 | 3-713-786-21 | SCREW (M2X3) |  |
| 14 | *3-732-925-01 | HOUSING, MICROPHONE |  |
| 15 | *1-629-381-13 | RC-26 BOARD |  |
| 16 | 3-713-790-31 | SCREW (M2X8), TAPPING, P3 |  |
| 17 | *A-7061-594-A | MA-31 BOARD, COMPLETE |  |
| 18 | 1-571-837-11 | SWITCH, PUSH (ZOOM SW) (S901) |  |
| 19 | *3-732-937-01 | RETAINER, ZOOM BUTTON |  |
| 20 | *3-732-985-01 | LABEL, MODEL NUMBER (U/C) (CCD-F35) |  |
|  | *3-733-954-01 | LABEL, MODEL NUMBER (U) (CCD-F36) |  |
|  | *3-733-962-01 | LABEL, MODEL NUMBER (E) (CCD-F280) |  |
| 21 | 3-732-926-01 | BUTTON, EDIT |  |
| 22 | 3-732-924-01 | BLIND, L/R (CCD-F35/F280) |  |
|  | 3-732-924-02 | BLIND, L/R (CCD-F36) |  |
| 23 | X-3732-949-1 | CABINET (RIGHT) ASSY(CCD-F35/F280) | 24-26 |
|  | X-3732-969-1 | CABINET (RIGHT) ASSY (CCD-F36) | 24-26 |
| 24 | 3-732-905-01 | BUTTON, BATTERY RELEASE (CCD-F35/F280) |  |
|  | 3-732-905-21 | BUTTON, BATTERY RELEASE (CCD-F36) |  |
| 25 | 3-732-906-01 | LOCK, BATTERY |  |
| 26 | *3-719-683-01 | LABEL, BATTERY FITTING |  |
| 27 | *3-704-256-01 | LABEL, CAUTION (CCD-F35(US MODEL)/F36) |  |
| 28 | X-3732-952-1 | LID (B) ASSY, CASSETTE (CCD-F35) |  |
|  | X-3732-966-1 | LID (B) ASSY, CASSETTE (CCD-F280) |  |
|  | X-3732-970-1 | LID ASSY, CASSETTE (CCD-F36) |  |
| 29 | X-2536-712-1 | WIND SCREEN ASSY |  |
| 30 | 3-733-912-01 | SCREW (M2X2.5), SPECIAL HEAD |  |
| 31 | *3-704-367-01 | LABEL (CCD-F35(US MODEL)/F36) |  |

## 5-2. CABINET (UPPER), EVF ASSEMBLY

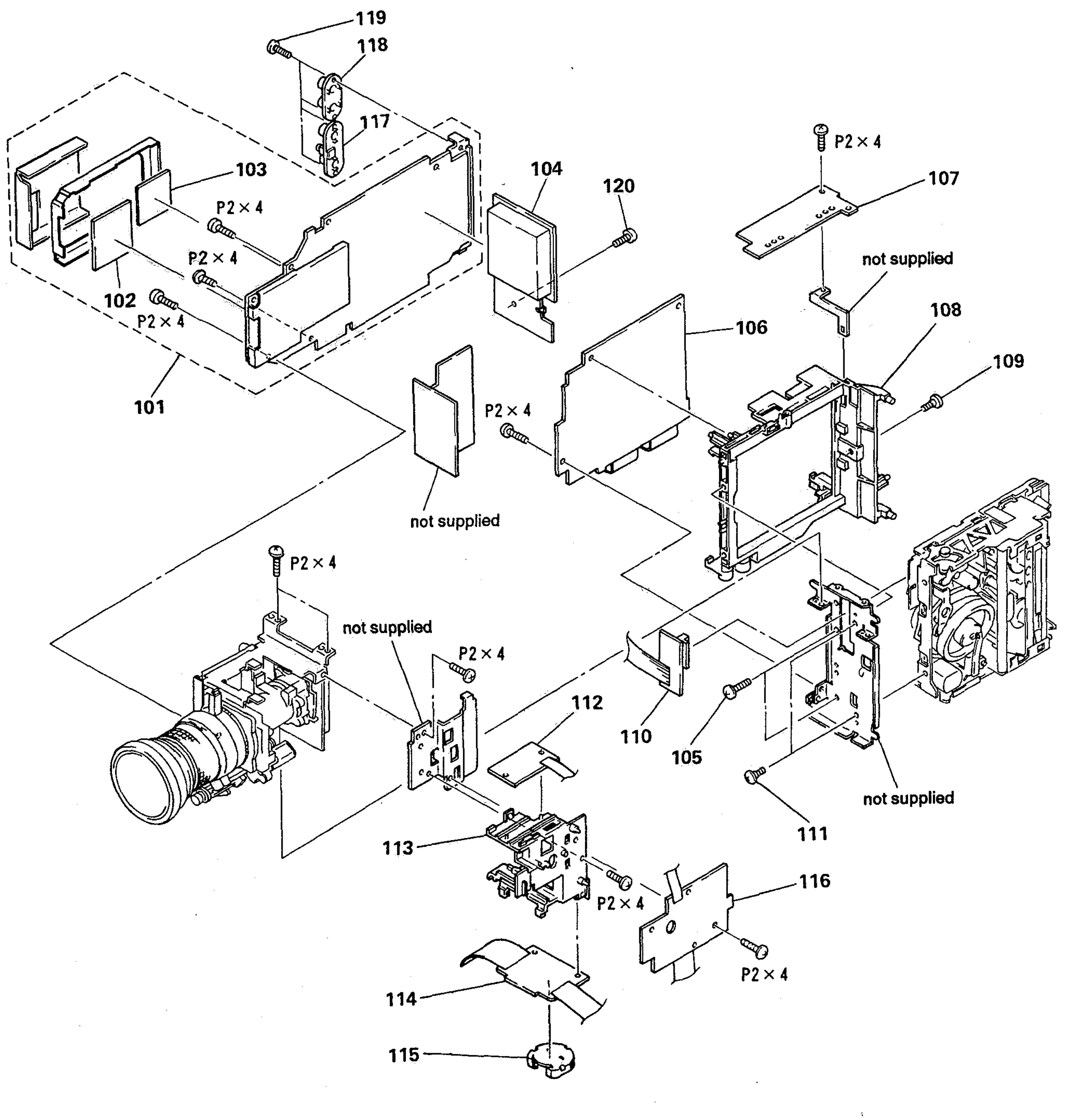


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifé.

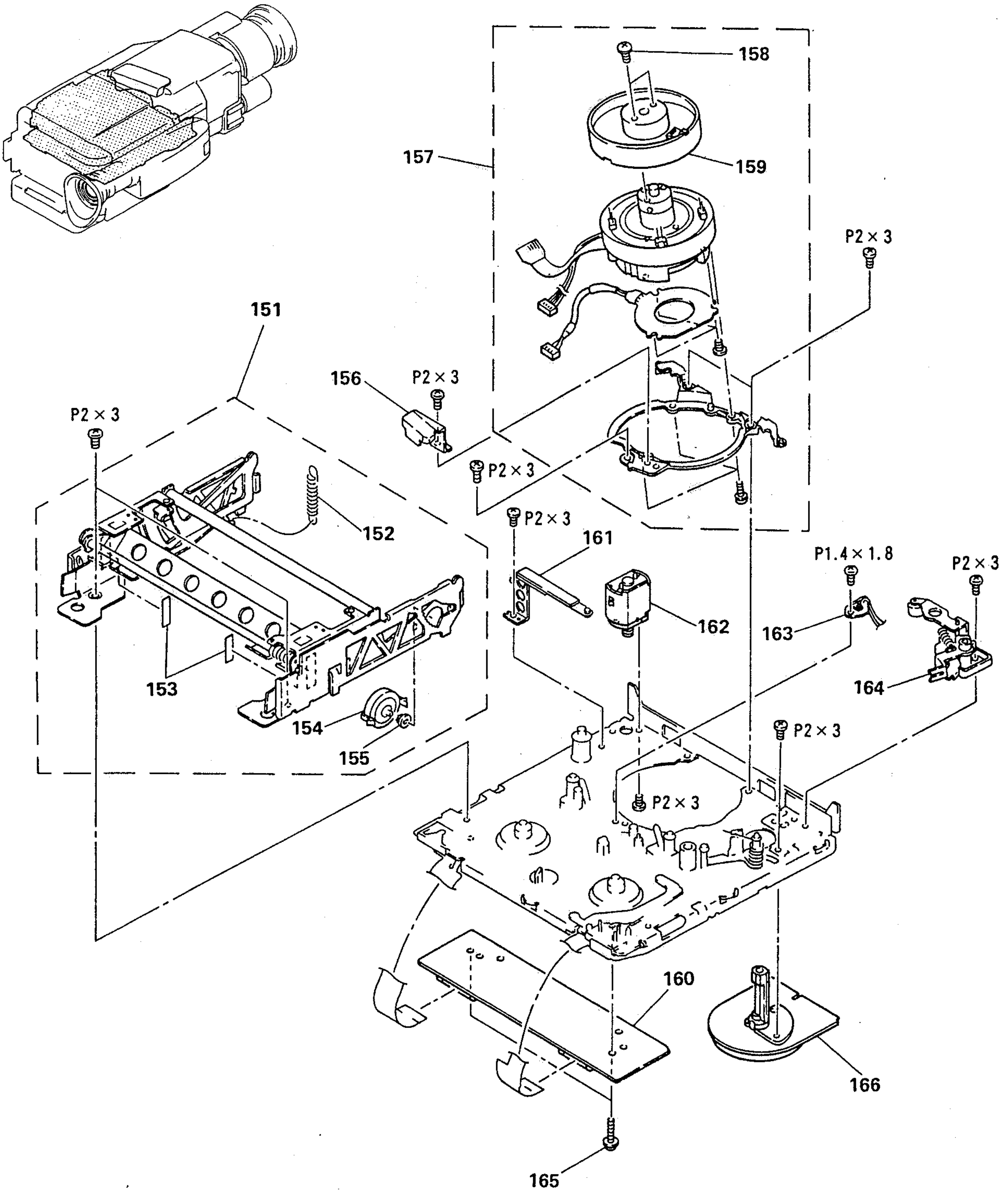
| No. | Part No. | Description | Remark |
|---|---|---|---|
| 51 | X-3732-950-1 | CABINET (UPPER) ASSY(CCD-F35/F280) | 52-55 |
| | X-3732-971-1 | CABINET (UPPER) ASSY(CCD-F36) | 52-55 |
| 52 | 3-732-919-01 | BUTTON, EJECT (CCD-F35/F280) | |
| | *3-732-919-11 | BUTTON, EJECT (CCD-F36) | |
| 53 | 3-732-920-01 | LOCK, EJECT | |
| 54 | 3-669-440-00 | SPRING, TENSION | |
| 55 | 3-719-381-01 | SCREW (M2X4) | |
| 56 | A-7019-142-A | EVF COMPLETE ASSY (CCD-F35/F36) | 57-74 |
| | *A-7019-147-A | EVF COMPLETE ASSY (CCD-F36) | 57-74 |
| 57 | X-3732-911-1 | CABINET (LOWER) ASSY, EVF | |
| 58 | *3-732-944-01 | BEARING, EVF | |
| 59 | 3-732-950-01 | BLIND, EVF | |
| 60 | 3-732-949-01 | BLIND, EVF CABINET (LOWER) | |
| 61 | 3-732-947-01 | PLATE, LOCK | |
| 62 | 3-732-946-01 | SPRING, COMPRESSION | |
| 63 | 3-704-233-01 | LABEL, CAUTION, HIGH VOLTAGE (CCD-F35/F36) | |
| 64 | 3-732-987-01 | SCREW (M2X20), +P | |
| 65 | *A-7061-560-A | VF-14 BOARD, COMPLETE | 66, 67 |
| 66 | ⚠1-439-431-11 | TRANSFORMER ASSY, FLYBACK (T901) | |
| 67 | *1-629-384-13 | LD-13 BOARD | |
| 68 | ⚠1-452-482-11 | CRT ASSY (M01JYZ60WB) | |
| 69 | 1-540-019-21 | SOCKET ASSY, CRT (W901) | |
| 70 | X-3732-910-1 | HOLDER ASSY, CRT | |
| 71 | 3-732-948-01 | CABINET (UPPER), EVF | |
| 72 | 3-713-790-31 | SCREW (M2X8), TAPPING, P3 | |
| 73 | A-7080-715-A | HOLDER BLOCK ASSY, FINDER | |
| 74 | 3-733-922-01 | EYE CUP | |
| 75 | 3-732-988-01 | SCREW (M2X2.5) | |
| 76 | *3-703-845-01 | LABEL (N) (U/C), MAIN CAUTION (CCD-F35/F36) | |

## 5-3. MAIN BOARD ASSEMBLY


119
118
117
103
P2 × 4
104
120
P2 × 4
107
P2 × 4
not supplied
102
P2 × 4
108
106
109
101
P2 × 4
not supplied
P2 × 4
not supplied
P2 × 4
112
110
105
not supplied
111
113
116
P2 × 4
P2 × 4
114
115

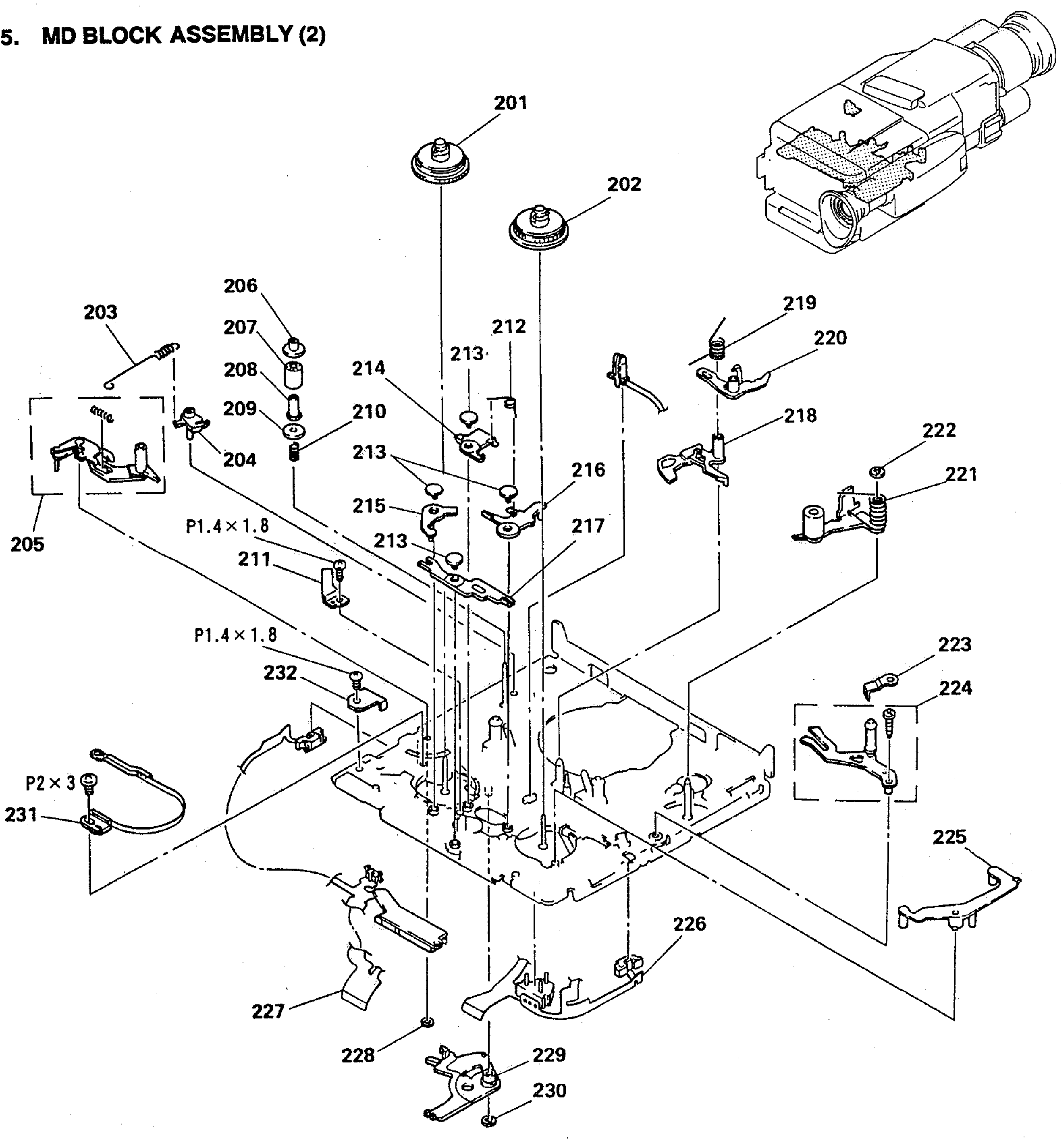
| No. | Part No. | Description | Remark |
|---|---|---|---|
| 101 | *A-7061-553-A | CV-8 BOARD, COMPLETE | 102, 103 |
| 102 | A-7068-150-A | DT-73 BOARD, COMPLETE (HIC) | |
| 103 | A-7068-128-A | MX-7 BOARD, COMPLETE (HIC) | |
| 104 | *A-7061-382-A | PS-180 BOARD, COMPLETE | |
| 105 | 3-713-790-01 | SCREW (M2X5), TAPPING, P3 | |
| 106 | *A-7061-380-A | CO-2 BOARD, COMPLETE | |
| 107 | *A-7061-440-A | VK-1 BOARD, COMPLETE | |
| 108 | *3-732-932-01 | HOLDER, MD | |
| 109 | 3-732-791-01 | SCREW (M2X3) | |
| 110 | *1-629-377-13 | KS-3 BOARD | |
| 111 | 3-732-816-01 | SCREW, STEP | |
| 112 | *1-629-379-13 | DK-2 BOARD | |
| 113 | *3-732-939-01 | HOLDER, CK PC BOARD | |
| 114 | *1-629-372-11 | LI-5 BOARD | |
| 115 | 1-550-104-32 | HOLDER, BATTERY | |
| 116 | *A-7061-556-A | CK-8 BOARD, COMPLETE | |
| 117 | 1-537-142-11 | TERMINAL BOARD | |
| 118 | 1-568-409-11 | JACK, PIN 2P | |
| 119 | 3-719-695-01 | SCREW (M1.7X3.5), SPECIAL HEAD | |
| 120 | 3-713-790-01 | SCREW (M2X6), TAPPING, P3 | |

## 5-4. MD BLOCK ASSEMBLY (1)


158
157
159
P2 × 3
151
156
P2 × 3
P2 × 3
P2 × 3
152
P2 × 3
161
162
P1.4 × 1.8
163
P2 × 3
164
153
154
155
P2 × 3
P2 × 3
160
166
165

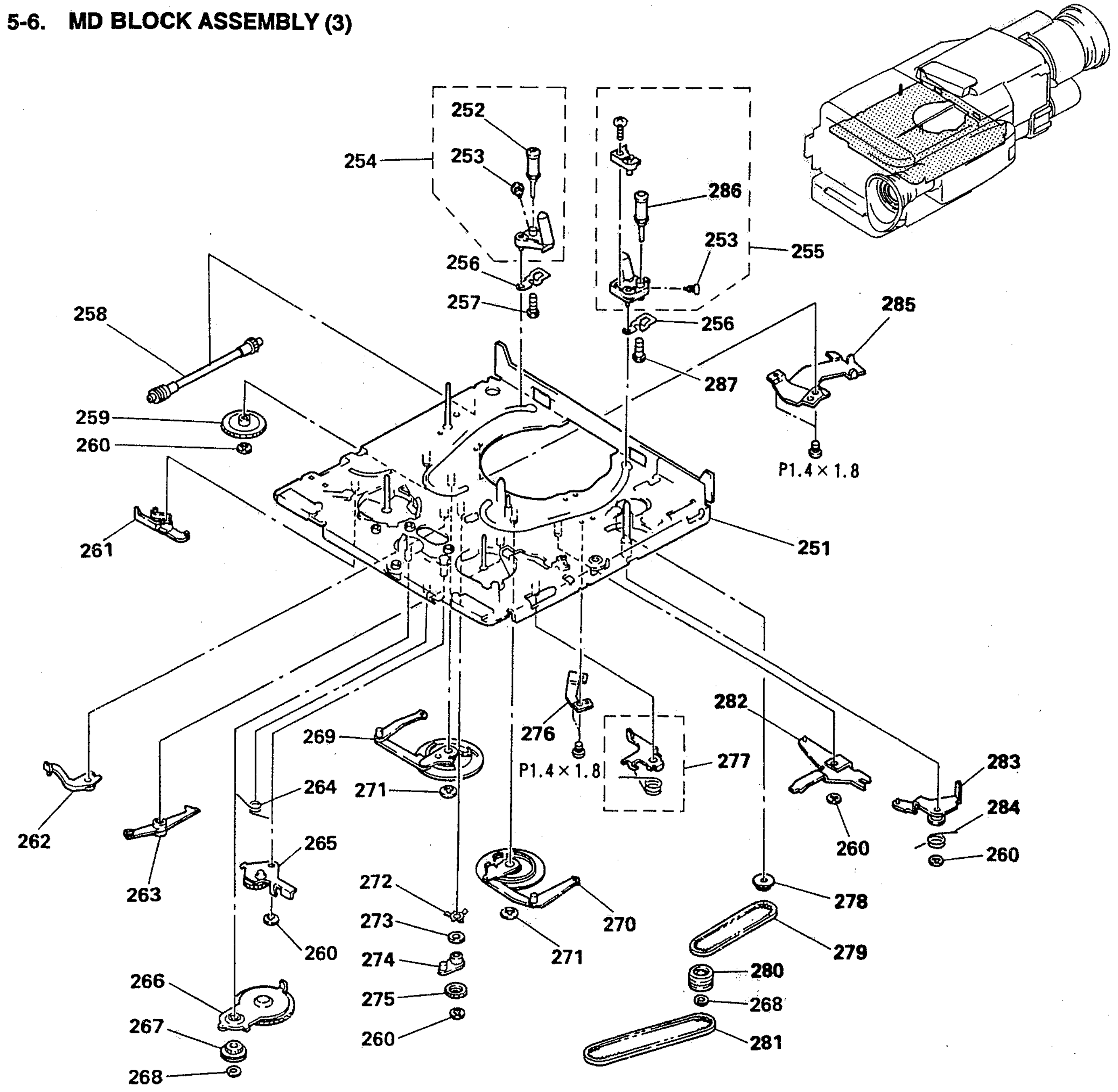
| No. | Part No. | Description | Remark |
|---|---|---|---|
| 151 | X-3726-888-1 | CASSETTE COMPARTMENT ASSY (N) | 152-155 |
| 152 | 3-728-825-03 | SPRING, TENSION | |
| 153 | *3-728-829-01 | TAPE | |
| 154 | 3-728-867-11 | DAMPER, OIL | |
| 155 | 3-728-828-02 | GEAR, DAMPER | |
| 156 | 3-728-868-01 | GUARD, GUIDE | |
| 157 | A-7048-219-A | DRUM ASSY (DGU-41A-R) | 158, 159 |
| 158 | 3-686-403-01 | SCREW (M2X5), P1 | |
| 159 | A-7049-203-A | DRUM ASSY, UPPER, ROTARY (DGR-41R) | |
| 160 | *A-7061-441-A | CC-15 BOARD, COMPLETE | |
| 161 | 1-535-739-12 | TERMINAL, SHAFT EARTH | |
| 162 | A-7040-160-A | MOTOR ASSY, THREADING (M903) | |
| 163 | 1-808-505-11 | SENSOR (DEW) | |
| 164 | A-7040-161-B | ROLLER BLOCK ASSY, HC | |
| 165 | 3-713-790-01 | SCREW (M2X6), TAPPING, P3 | |
| 166 | 8-835-331-01 | MOTOR, DC U-22A (CAPSTAN) (M902) | |

## 5-5. MD BLOCK ASSEMBLY (2)


201
202
206
203
219
207
212
220
208
213
214
209
210
218
222
204
213
216
221
215
205
P1.4×1.8
217
213
211
P1.4×1.8
223
232
224
P2×3
231
225
226
227
228
229
230

| No. | Part No. | Description | Remark |
|---|---|---|---|
| 201 | X-3726-821-2 | TABLE ASSY, REEL, S | |
| 202 | X-3726-825-4 | TABLE ASSY, REEL, T | |
| 203 | 3-728-995-01 | SPRING, TENSION | |
| 204 | 3-728-855-03 | ARM, ADJUSTMENT | |
| 205 | X-3726-832-3 | ARM ASSY, TENSION REGULATOR | |
| 206 | 3-726-884-01 | FLANGE, UPPER, TG2 | |
| 207 | 3-726-883-01 | ROLLER, TG2 | |
| 208 | 3-726-885-01 | SLEEVE, TG2 | |
| 209 | 3-726-882-02 | FLANGE, LOWER, TG2 | |
| 210 | 3-726-886-01 | SPRING, COMPRESSION | |
| 211 | 3-726-848-01 | RETAINER, TL | |
| 212 | 3-726-866-01 | SPRING (ST), TORSION | |
| 213 | 3-726-858-01 | PIN, SHAFT RETAINER | |
| 214 | 3-728-849-01 | BRAKE, S | |
| 215 | 3-726-852-01 | BRAKE, LB | |
| 216 | 3-728-850-01 | BRAKE, T | |
| 217 | 3-726-853-01 | LEVER, LB | |
| 218 | 3-728-875-01 | STOPPER, RK | |
| 219 | 3-726-864-01 | SPRING (RK), TORSION | |
| 220 | 3-728-852-02 | ARM, RK STOPPER | |
| 221 | A-7040-163-B | ARM BLOCK ASSY, PINCH | |
| 222 | 3-669-465-00 | WASHER (1.5), STOPPER | |
| 223 | 3-728-808-01 | SPRING, LEAF | |
| 224 | X-3726-822-1 | ARM ASSY, TG7 | |
| 225 | 3-728-848-01 | ARM, LB RELEASE | |
| 226 | 1-628-061-12 | FP-90 FLEXIBLE BOARD | |
| 227 | 1-628-060-12 | FP-89 FLEXIBLE BOARD | |
| 228 | 3-321-393-11 | WASHER, STOPPER | |
| 229 | X-3726-806-1 | LEVER ASSY, SW | |
| 230 | 3-726-829-01 | WASHER, STOPPER | |
| 231 | X-3726-809-1 | BAND ASSY, TENSION REGULATOR | |
| 232 | 3-730-125-01 | RETAINER, SW | |

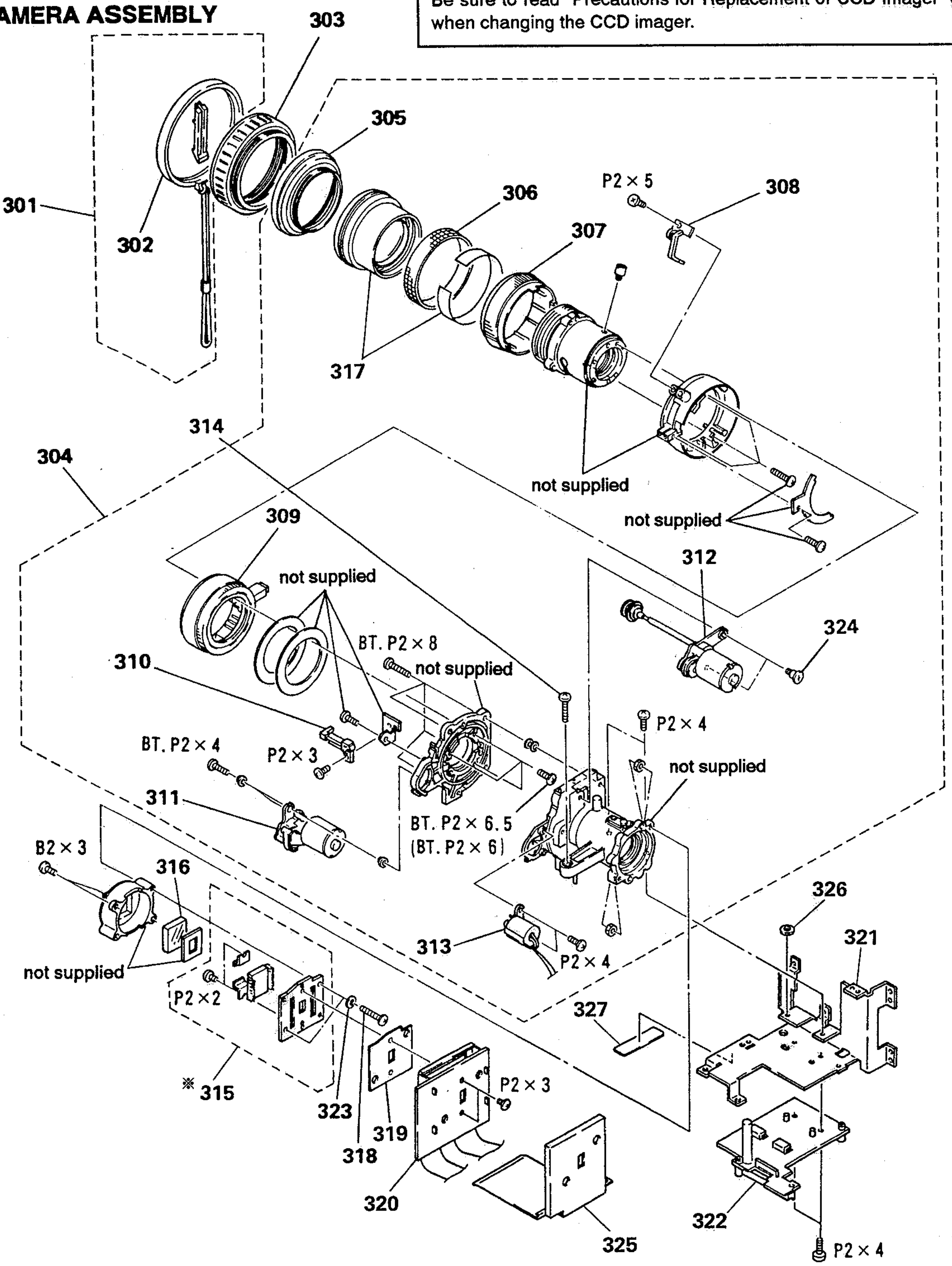
## 5-6. MD BLOCK ASSEMBLY (3)


252
254
253
286
253
255
256
257
256
285
258
287
259
260
P1.4 × 1.8
261
251
282
269
276
277
P1.4 × 1.8
283
264
271
262
265
284
260
260
263
272
278
273
270
260
274
271
279
280
266
275
268
267
260
281
268

| No. | Part No. | Description | Remark |
|---|---|---|---|
| 251 | X-3726-834-4 | CHASSIS ASSY, MECHANICAL | |
| 252 | X-3726-820-1 | ROLLER ASSY (U), GUIDE | |
| 253 | 3-726-822-01 | SCREW (M1.4X2) (STEP), HEAD | |
| 254 | A-7040-128-A | COASTER (LEFT) BLOCK ASSY | 252, 253 |
| 255 | A-7040-129-E | COASTER (RIGHT) BLOCK ASSY | 253, 286 |
| 256 | 3-726-820-02 | SPRING, LEAF | |
| 257 | 3-726-830-01 | SCREW (M1.4X4) (THREE LOCK) | |
| 258 | X-3726-807-1 | WORM ASSY | |
| 259 | 3-726-826-01 | GEAR, WHEEL | |
| 260 | 3-726-829-01 | WASHER, STOPPER | |
| 261 | 3-728-842-01 | LEVER, EJECT | |
| 262 | 3-728-851-01 | BRAKE, UL | |
| 263 | 3-726-854-01 | ARM, BRAKE RELEASE | |
| 264 | 3-726-865-01 | SPRING (LB), TORSION | |
| 265 | A-7040-130-A | GEAR BLOCK ASSY, LB | |
| 266 | X-3726-802-2 | GEAR ASSY, RK | |
| 267 | X-3726-812-1 | GEAR ASSY, RC | |
| 268 | 3-321-393-11 | WASHER, STOPPER | |
| 269 | X-3726-830-2 | GEAR (LEFT) ASSY, DRIVE | |
| 270 | X-3726-831-2 | GEAR (RIGHT) ASSY, DRIVE | |
| 271 | 3-669-465-00 | WASHER (1.5), STOPPER | |
| 272 | 3-726-867-01 | SPRING, LEAF | |
| 273 | 3-701-436-21 | WASHER, POLYEHTHYLENE | |
| 274 | 3-726-857-02 | ARM, UL | |
| 275 | 3-726-856-02 | GEAR, UL | |
| 276 | *3-726-805-01 | REINFORCEMENT (TT) | |
| 277 | X-3726-808-2 | BRAKE ASSY, TS | |
| 278 | X-3726-805-1 | GEAR ASSY, JOINT | |
| 279 | 3-728-866-11 | BELT (S), TIMING | |
| 280 | X-3726-838-1 | PULLEY (UPPER) ASSY, MIDWAY | |
| 281 | 3-728-865-11 | BELT (L), TIMING | |
| 282 | X-3726-804-1 | LEVER ASSY, THREADING | |
| 283 | X-3726-824-1 | ARM ASSY, PINCH SUB | |
| 284 | 3-726-895-01 | SPRING | |
| 285 | X-3726-841-1 | REINFORCEMENT (SS) ASSY | |
| 286 | X-3726-864-1 | ROLLER ASSY (U)-BS, GUIDE | |
| 287 | 3-730-140-01 | SCREW (M1.2X4) | |

## 5-7. CAMERA ASSEMBLY

Be sure to read "Precautions for Replacement of CCD Imager" on page 87 when changing the CCD imager.


303
305
301
302
306
P2 × 5
308
307
317
314
304
not supplied
not supplied
309
not supplied
312
324
310
BT. P2 × 8
not supplied
P2 × 4
BT. P2 × 4
P2 × 3
not supplied
311
BT. P2 × 6.5
(BT. P2 × 6)
B2 × 3
316
326
321
not supplied
313
P2 × 4
P2 ×2
327
※ 315
P2 × 3
323
319
318
320
322
325
P2 × 4

| No. | Part No. | Description | Remark |
|---|---|---|---|
| 301 | A-7090-806-A | CAP ASSY, HOOD | 302 |
| 302 | 3-724-588-01 | CAP, HOOD | |
| 303 | 3-728-269-01 | HOOD | |
| 304 | 1-547-332-11 | LENS, ZOOM (VCL-906XD) | 305-313, 317, 324 |
| 305 | 3-707-568-01 | ADAPTOR, LENS HOOD | |
| 306 | 3-707-559-01 | RUBBER, FOCUS | |
| 307 | 3-707-564-01 | RING, F SCALE | |
| 308 | 3-707-567-01 | BEARING, F | |
| 309 | 3-707-558-01 | RING ASSY, ZOOM | |
| 310 | 3-707-566-01 | SW ASSY, (F) LIMIT (FOCUS) (S902) | |
| 311 | 3-707-562-01 | MOTOR ASSY, PZ GEAR (ZOOM) (M905) | |
| 312 | 3-707-561-01 | MOTOR ASSY, AF GEAR (FOCUS) (M904) | |
| 313 | 3-707-560-01 | METER ASSY, EE (IRIS) (M906) | |
| 314 | 3-713-790-31 | SCREW (M2X8), TAPPING, P3 | |
| 315 | A-7090-878-A | CCD ASSY | |
| 316 | A-7090-879-A | FILTER BLOCK, OPTICAL (OFB-02-01) | |
| 317 | A-7030-104-A | FOCUS SERVICE KIT | |
| 318 | 3-732-981-01 | SCREW (M2X18) | |
| 319 | *3-725-180-01 | SHEET, INSULATING, CCD HOLDER | |
| 320 | *A-7061-444-A | CD-10 BOARD, COMPLETE | |
| 321 | *3-732-935-01 | PLATE, FRAME, LENS | |
| 322 | *3-732-934-01 | HOLDER, LENS | |
| 323 | 3-303-961-11 | WASHER, POLY | |
| 324 | 3-707-499-01 | FITTING SCREW, F MOTOR | |
| 325 | *X-3732-914-1 | SHIELD (CD) ASSY, CAMERA (CCD-F35/F36) | |
| 326 | *3-733-933-01 | SPACER | |
| 327 | *3-732-996-01 | INSULATOR, MA | |

# SECTION 6
# ELECTRICAL PARTS LIST

**NOTE:**

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifé.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- −XX, −X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE : Metal Oxide-film resistor
  F : nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, U : μ, for example:
  UA...: μA..., UPA...: μPA...,
  UPB...: μPB..., UPC...: μPC...,
  UPD...: μPD...
- CAPACITORS
  MF : μF, PF : μμF
- COILS
  MMH : mH, UH : μH

| Ref.No | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| | 1-628-060-12 | FP-89 FLEXIBLE BOARD(Ref. No.<br>********************* 6000 series) | | | |
| | 1-571-664-11 | SWITCH, SLIDE (ENCODER) | | | |
| | 3-728-869-02 | HOLDER, SENSOR | | | |
| | | DIODE | | | |
| D301 | 8-719-801-55 | PHOTO COUPLER TLP907-0 | | | |
| | | TRANSISTOR | | | |
| Q301 | 8-729-906-48 | TRANSISTOR EE-TP109 | | | |
| | | ***************************************************************** | | | |
| | 1-628-061-12 | FP-90 FLEXIBLE BOARD(Ref. No.<br>********************* 7000 series) | | | |
| | 3-728-837-01 | HOLDER, LED | | | |
| | 3-728-869-02 | HOLDER, SENSOR | | | |
| | | DIODE | | | |
| D302 | 8-719-940-81 | DIODE GL452S | | | |
| D303 | 8-719-801-55 | PHOTO COUPLER TLP907-0 | | | |
| | | TRANSISTOR | | | |
| Q302 | 8-729-906-48 | TRANSISTOR EE-TP109 | | | |
| | | SWITCH | | | |
| S302 | 1-571-680-11 | SWITCH, PUSH (3 KEY)<br>(REC PROOF/TAPE SELECT) | | | |
| | | ***************************************************************** | | | |
| | *A-7061-380-A | CO-2 BOARD, COMPLETE(Ref. No.<br>********************* 6000 series) | | | |
| | | CAPACITOR | | | |
| C101 | 1-163-809-11 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C102 | 1-163-809-11 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C103 | 1-163-809-11 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C104 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C105 | 1-163-109-00 | CERAMIC CHIP | 47PF | 5% | 50V |
| C106 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C107 | 1-163-809-11 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C108 | 1-163-123-00 | CERAMIC CHIP | 180PF | 5% | 50V |
| C109 | 1-164-161-11 | CERAMIC CHIP | 0.0022MF | 10% | 50V |
| C110 | 1-124-778-00 | ELECT | 22MF | 20% | 6.3V |
| C111 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C112 | 1-163-809-11 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C113 | 1-164-004-11 | CERAMIC CHIP | 0.1MF | 10% | 25V |
| C114 | 1-164-004-11 | CERAMIC CHIP | 0.1MF | 10% | 25V |
| C115 | 1-164-004-11 | CERAMIC CHIP | 0.1MF | 10% | 25V |
| C116 | 1-164-004-11 | CERAMIC CHIP | 0.1MF | 10% | 25V |
| C117 | 1-163-809-11 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C118 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C119 | 1-124-778-00 | ELECT | 22MF | 20% | 6.3V |
| C123 | 1-163-809-11 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C124 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C125 | 1-163-037-11 | CERAMIC CHIP | 0.022MF | 10% | 25V |
| C126 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C131 | 1-163-117-00 | CERAMIC CHIP | 100PF | 5% | 50V |
| C132 | 1-163-121-00 | CERAMIC CHIP | 150PF | 5% | 50V |
| C133 | 1-163-115-00 | CERAMIC CHIP | 82PF | 5% | 50V |
| C134 | 1-163-117-00 | CERAMIC CHIP | 100PF | 5% | 50V |
| C135 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C136 | 1-163-809-11 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C138 | 1-163-809-11 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C139 | 1-163-809-11 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C140 | 1-163-809-11 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C141 | 1-163-009-11 | CERAMIC CHIP | 0.001MF | 10% | 50V |
| C145 | 1-124-778-00 | ELECT | 22MF | 20% | 6.3V |
| C148 | 1-163-137-00 | CERAMIC CHIP | 680PF | 10% | 50V |
| C149 | 1-163-809-11 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C160 | 1-124-778-00 | ELECT | 22MF | 20% | 6.3V |
| C161 | 1-126-204-11 | ELECT | 47MF | 20% | 16V |
| C162 | 1-163-133-00 | CERAMIC CHIP | 470PF | 5% | 50V |
| C163 | 1-163-809-11 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C165 | 1-124-778-00 | ELECT | 22MF | 20% | 6.3V |
| C166 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C401 | 1-126-195-11 | ELECT | 2.2MF | 20% | 50V |
| C403 | 1-126-206-11 | ELECT | 100MF | 20% | 6.3V |
| C404 | 1-126-206-11 | ELECT | 100MF | 20% | 6.3V |
| C405 | 1-126-198-11 | ELECT | 4.7MF | 20% | 35V |
| C406 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C407 | 1-163-009-11 | CERAMIC CHIP | 0.001MF | 10% | 50V |
| C408 | 1-126-193-11 | ELECT | 1MF | 20% | 50V |
| C409 | 1-126-206-11 | ELECT | 100MF | 20% | 6.3V |
| C410 | 1-126-207-11 | ELECT | 33MF | 20% | 4V |
| C411 | 1-126-207-11 | ELECT | 33MF | 20% | 4V |
| C412 | 1-126-193-11 | ELECT | 1MF | 20% | 50V |
| C413 | 1-126-193-11 | ELECT | 1MF | 20% | 50V |
| C414 | 1-126-205-11 | ELECT | 47MF | 20% | 6.3V |
| C415 | 1-163-017-00 | CERAMIC CHIP | 0.0047MF | 10% | 50V |
| C416 | 1-163-019-00 | CERAMIC CHIP | 0.0068MF | 10% | 50V |
| C417 | 1-163-017-00 | CERAMIC CHIP | 0.0047MF | 10% | 50V |
| C418 | 1-126-206-11 | ELECT | 100MF | 20% | 6.3V |
| C420 | 1-126-193-11 | ELECT | 1MF | 20% | 50V |
| C421 | 1-163-009-11 | CERAMIC CHIP | 0.001MF | 10% | 50V |
| C501 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C503 | 1-163-095-00 | CERAMIC CHIP | 12PF | 5% | 50V |
| C504 | 1-163-095-00 | CERAMIC CHIP | 12PF | 5% | 50V |
| C505 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C506 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C507 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C508 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C509 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C510 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |

## CO-2

| Ref.No | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C511 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C512 | 1-126-204-11 | ELECT | 47MF | 20% | 16V |
| C513 | 1-163-809-11 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C514 | 1-136-718-11 | ELECT | 0.1MF | 5% | 25V |
| C515 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C516 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C517 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C518 | 1-126-195-11 | ELECT | 2.2MF | 20% | 50V |
| C519 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C520 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C521 | 1-126-193-11 | ELECT | 1MF | 20% | 50V |
| C522 | 1-126-193-11 | ELECT | 1MF | 20% | 50V |
| C523 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C524 | 1-126-193-11 | ELECT | 1MF | 20% | 50V |
| C525 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C526 | 1-126-204-11 | ELECT | 47MF | 20% | 16V |
| C527 | 1-127-506-00 | ELECT(SOLID) | 1MF | 20% | 25V |
| C528 | 1-126-196-11 | ELECT | 3.3MF | 20% | 50V |
| C529 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C530 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | 10% | 25V |
| C531 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | 10% | 25V |
| C532 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | 10% | 25V |
| C533 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C534 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C535 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C536 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C537 | 1-163-009-11 | CERAMIC CHIP | 0.001MF | 10% | 50V |
| C538 | 1-163-009-11 | CERAMIC CHIP | 0.001MF | 10% | 50V |
| C539 | 1-163-037-11 | CERAMIC CHIP | 0.022MF | 10% | 25V |
| C540 | 1-163-037-11 | CERAMIC CHIP | 0.022MF | 10% | 25V |
| C541 | 1-163-109-00 | CERAMIC CHIP | 47PF | 5% | 50V |
| C542 | 1-163-109-00 | CERAMIC CHIP | 47PF | 5% | 50V |
| C543 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C544 | 1-162-638-11 | CERAMIC CHIP | 1MF | | 16V |
| C545 | 1-162-638-11 | CERAMIC CHIP | 1MF | | 16V |
| C546 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C548 | 1-163-035-00 | CERAMIC CHIP | 0.047MF | | 50V |
| C549 | 1-163-081-00 | CERAMIC CHIP | 0.22MF | | 25V |
| C550 | 1-164-161-11 | CERAMIC CHIP | 0.0022MF | | 50V |
| C551 | 1-163-023-00 | CERAMIC CHIP | 0.015MF | | 50V |
| C552 | 1-162-638-11 | CERAMIC CHIP | 1MF | | 16V |
| C553 | 1-163-133-00 | CERAMIC CHIP | 470PF | 5% | 50V |
| C554 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | | 50V |
| C555 | 1-163-125-00 | CERAMIC CHIP | 220PF | 10% | 50V |
| C556 | 1-163-017-00 | CERAMIC CHIP | 0.0047MF | 10% | 50V |
| C557 | 1-163-141-00 | CERAMIC CHIP | 0.001MF | 5% | 50V |
| C558 | 1-163-015-00 | CERAMIC CHIP | 0.0033MF | 10% | 50V |
| C559 | 1-163-809-11 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C560 | 1-162-638-11 | CERAMIC CHIP | 1MF | | 16V |
| C561 | 1-163-135-00 | CERAMIC CHIP | 560PF | 5% | 50V |
| C562 | 1-163-109-00 | CERAMIC CHIP | 47PF | 5% | 50V |
| C563 | 1-163-145-00 | CERAMIC CHIP | 0.0015MF | 10% | 50V |
| C564 | 1-163-101-00 | CERAMIC CHIP | 22PF | 5% | 50V |
| C565 | 1-163-809-11 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C566 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C567 | 1-164-005-11 | CERAMIC CHIP | 0.47MF | | 25V |
| C570 | 1-164-004-11 | CERAMIC CHIP | 0.1MF | 10% | 25V |
| C573 | 1-163-809-11 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C574 | 1-162-638-11 | CERAMIC CHIP | 1MF | | 16V |
| C576 | 1-162-638-11 | CERAMIC CHIP | 1MF | | 16V |
| C577 | 1-164-004-11 | CERAMIC CHIP | 0.1MF | 10% | 25V |
| C578 | 1-163-141-00 | CERAMIC CHIP | 0.001MF | 5% | 50V |
| C579 | 1-163-019-00 | CERAMIC CHIP | 0.0068MF | 10% | 50V |
| C580 | 1-162-638-11 | CERAMIC CHIP | 1MF | | 16V |
| C581 | 1-135-092-21 | TANTAL. CHIP | 3.3MF | 20% | 16V |
| C582 | 1-164-004-11 | CERAMIC CHIP | 0.1MF | 10% | 25V |
| C590 | 1-164-161-11 | CERAMIC CHIP | 0.0022MF | 10% | 50V |
| C591 | 1-164-161-11 | CERAMIC CHIP | 0.0022MF | 10% | 50V |
| C617 | 1-163-009-11 | CERAMIC CHIP | 0.001MF | 10% | 50V |
| C621 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C622 | 1-163-123-00 | CERAMIC CHIP | 180PF | 5% | 50V |
| C623 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C624 | 1-163-101-00 | CERAMIC CHIP | 22PF | 5% | 50V |
| C625 | 1-163-101-00 | CERAMIC CHIP | 22PF | 5% | 50V |
| C626 | 1-127-489-00 | ELECT(SOLID) | 10MF | 20% | 10V |
| C627 | 1-124-638-11 | ELECT | 22MF | 20% | 10V |
| C628 | 1-163-095-00 | CERAMIC CHIP | 12PF | 5% | 50V |
| C629 | 1-163-101-00 | CERAMIC CHIP | 22PF | 5% | 50V |
| C630 | 1-127-489-00 | ELECT(SOLID) | 10MF | 20% | 10V |
| C631 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C632 | 1-163-809-11 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C633 | 1-135-149-21 | TANTAL. CHIP | 2.2MF | 20% | 6.3V |

### CONNECTOR

| Ref.No | Part No. | Description |
|---|---|---|
| CN101 | 1-566-529-11 | CONNECTOR, FPC (ZIF) 13P |
| CN102 | *1-566-184-11 | PIN, CONNECTOR (PC BOARD) 5P |
| CN501 | 1-566-529-11 | CONNECTOR, FPC (ZIF) 13P |
| CN502 | 1-566-531-11 | CONNECTOR, FPC (ZIF) 15P |
| CN503 | 1-565-529-21 | PIN, CONNECTOR (PC BOARD) 4P |
| CN504 | 1-565-529-21 | PIN, CONNECTOR (PC BOARD) 4P |
| CN505 | *1-565-541-11 | PIN, CONNECTOR (PC BOARD) 2P |
| CN506 | 1-565-527-11 | PIN, CONNECTOR (PC BOARD) 2P |
| CN507 | 1-566-528-11 | CONNECTOR, FPC (ZIF) 12P |

### DIODE

| Ref.No | Part No. | Description |
|---|---|---|
| D504 | 8-719-801-41 | DIODE 1SS196-TE85L |
| D505 | 8-719-801-41 | DIODE 1SS196-TE85L |
| D621 | 8-719-938-75 | DIODE SB05-05CP-TB |
| D622 | 8-719-938-75 | DIODE SB05-05CP-TB |
| D623 | 8-719-100-03 | DIODE 1S2835-T1 |

### FILTER

| Ref.No | Part No. | Description |
|---|---|---|
| FL401 | 1-236-145-11 | FILTER, BAND PASS |

### IC

| Ref.No | Part No. | Description |
|---|---|---|
| IC101 | 8-752-033-38 | IC CXA1202R |

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| IC401 | 8-741-150-50 | IC SBX1505-01 | |
| IC501 | 8-752-808-78 | IC CXP80116-090Q | |
| IC502 | 8-759-940-79 | IC S-81350AG | |
| IC503 | 8-759-974-21 | IC S-8054ALRS-LN | |
| IC504 | 8-759-804-72 | IC LB1631MTP | |
| IC505 | 8-759-100-94 | IC UPC358G2 | |
| IC506 | 8-759-107-68 | IC CX20115A | |
| IC507 | 8-759-202-45 | IC CX20114 | |
| IC508 | 8-759-805-06 | IC CXA1127M | |
| IC509 | 8-759-209-53 | IC CXA1204Q | |
| IC510 | 8-759-100-95 | IC UPC324G2 | |
| IC621 | 8-759-945-17 | IC MB3775PF | |

COIL

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| L101 | 1-408-777-00 | INDUCTOR CHIP 10UH | |
| L102 | 1-412-033-11 | INDUCTOR CHIP 220UH | |
| L103 | 1-412-029-11 | INDUCTOR CHIP 10UH | |
| L104 | 1-412-033-11 | INDUCTOR CHIP 220UH | |
| L105 | 1-412-033-11 | INDUCTOR CHIP 220UH | |
| L106 | 1-412-033-11 | INDUCTOR CHIP 220UH | |
| L107 | 1-412-033-11 | INDUCTOR CHIP 220UH | |
| L501 | 1-412-031-11 | INDUCTOR CHIP 47UH | |
| L502 | 1-412-031-11 | INDUCTOR CHIP 47UH | |
| L503 | 1-408-795-21 | INDUCTOR CHIP 330UH | |
| L504 | 1-412-032-21 | INDUCTOR CHIP 100UH | |
| L505 | 1-412-030-11 | INDUCTOR CHIP 22UH | |
| L506 | 1-412-032-21 | INDUCTOR CHIP 100UH | |
| L621 | 1-410-690-11 | COIL, CHOKE 22UH | |
| L622 | 1-410-626-11 | COIL, CHOKE 47UH | |
| L623 | 1-410-626-11 | COIL, CHOKE 47UH | |

IC LINK

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| PS503⚠ | 1-532-685-00 | LINK, IC (ICP-N20) | |

TRANSISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| Q102 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q108 | 8-729-805-69 | TRANSISTOR 2SA1341 | |
| Q109 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q110 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q111 | 8-729-100-76 | TRANSISTOR 2SA812-M6 | |
| Q112 | 8-729-173-38 | TRANSISTOR 2SA1175 | |
| Q113 | 8-729-100-76 | TRANSISTOR 2SA812-M6 | |
| Q114 | 8-729-805-45 | TRANSISTOR 2SC3395 | |
| Q116 | 8-729-805-69 | TRANSISTOR 2SA1341 | |
| Q401 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q402 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q403 | 8-729-805-69 | TRANSISTOR 2SA1341 | |
| Q404 | 8-729-805-45 | TRANSISTOR 2SC3395 | |
| Q405 | 8-729-805-69 | TRANSISTOR 2SA1341 | |
| Q406 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q503 | 8-729-805-39 | TRANSISTOR 2SC3898 | |
| Q504 | 8-729-805-39 | TRANSISTOR 2SC3898 | |
| Q506 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q507 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q515 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q516 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q517 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q518 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q519 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q520 | 8-729-104-93 | TRANSISTOR 2SB1040A | |
| Q521 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q522 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q524 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q525 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q526 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q527 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q528 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q529 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q530 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q531 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q532 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q533 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q534 | 8-729-805-45 | TRANSISTOR 2SC3395 | |
| Q535 | 8-729-805-45 | TRANSISTOR 2SC3395 | |
| Q536 | 8-729-805-39 | TRANSISTOR 2SC3898 | |
| Q537 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q538 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q539 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q540 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q621 | 8-729-805-43 | TRANSISTOR 2SC3396 | |
| Q622 | 8-729-162-13 | TRANSISTOR 2SC1621 | |
| Q623 | 8-729-805-25 | TRANSISTOR 2SB1121 | |
| Q624 | 8-729-805-45 | TRANSISTOR 2SC3395 | |
| Q625 | 8-729-805-65 | TRANSISTOR 2SA1344 | |
| Q626 | 8-729-162-13 | TRANSISTOR 2SC1621 | |
| Q627 | 8-729-805-25 | TRANSISTOR 2SB1121 | |
| Q628 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q629 | 8-729-100-66 | TRANSISTOR 2SC1623 | |

RESISTOR

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R102 | 1-216-101-00 | METAL GLAZE | 150K | 5% | 1/10W | |
| R103 | 1-216-041-00 | METAL GLAZE | 470 | 5% | 1/10W | |
| R104 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% | 1/10W | |
| R106 | 1-216-053-00 | METAL GLAZE | 1.5K | 5% | 1/10W | |
| R110 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R113 | 1-216-063-00 | METAL GLAZE | 3.9K | 5% | 1/10W | |
| R114 | 1-216-083-00 | METAL GLAZE | 27K | 5% | 1/10W | |
| R115 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R116 | 1-216-085-00 | METAL GLAZE | 33K | 5% | 1/10W | |
| R117 | 1-216-085-00 | METAL GLAZE | 33K | 5% | 1/10W | |
| R118 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R119 | 1-216-083-00 | METAL GLAZE | 27K | 5% | 1/10W | |
| R120 | 1-216-085-00 | METAL GLAZE | 33K | 5% | 1/10W | |
| R121 | 1-216-077-00 | METAL GLAZE | 15K | 5% | 1/10W | |
| R122 | 1-216-051-00 | METAL GLAZE | 1.2K | 5% | 1/10W | |

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

*Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.*
*Ne les remplacer que par une pièce portant le numéro spécifié.*

When indicating parts by reference number, please include the board name.

## CO-2

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R123 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R124 | 1-216-013-00 | METAL GLAZE | 33 | 5% | 1/10W | |
| R125 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R126 | 1-216-053-00 | METAL GLAZE | 1.5K | 5% | 1/10W | |
| R127 | 1-216-035-00 | METAL GLAZE | 270 | 5% | 1/10W | |
| R128 | 1-216-047-00 | METAL GLAZE | 820 | 5% | 1/10W | |
| R129 | 1-216-089-00 | METAL GLAZE | 47K | 5% | 1/10W | |
| R130 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R131 | 1-216-071-00 | METAL GLAZE | 8.2K | 5% | 1/10W | |
| R132 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R133 | 1-216-019-00 | METAL GLAZE | 56 | 5% | 1/10W | |
| R134 | 1-216-035-00 | METAL GLAZE | 270 | 5% | 1/10W | |
| R135 | 1-216-033-00 | METAL GLAZE | 220 | 5% | 1/10W | |
| R136 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R137 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R138 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% | 1/10W | |
| R139 | 1-216-043-00 | METAL GLAZE | 560 | 5% | 1/10W | |
| R140 | 1-216-041-00 | METAL GLAZE | 470 | 5% | 1/10W | |
| R141 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R143 | 1-216-095-00 | METAL GLAZE | 82K | 5% | 1/10W | |
| R151 | 1-216-101-00 | METAL GLAZE | 150K | 5% | 1/10W | |
| R152 | 1-216-013-00 | METAL GLAZE | 33 | 5% | 1/10W | |
| R155 | 1-216-059-00 | METAL GLAZE | 2.7K | 5% | 1/10W | |
| R156 | 1-216-041-00 | METAL GLAZE | 470 | 5% | 1/10W | |
| R157 | 1-216-085-00 | METAL GLAZE | 33K | 5% | 1/10W | |
| R158 | 1-216-039-00 | METAL GLAZE | 390 | 5% | 1/10W | |
| R160 | 1-216-059-00 | METAL GLAZE | 2.7K | 5% | 1/10W | |
| R161 | 1-216-013-00 | METAL GLAZE | 33 | 5% | 1/10W | |
| R401 | 1-216-041-00 | METAL GLAZE | 470 | 5% | 1/10W | |
| R402 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R403 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R404 | 1-216-053-00 | METAL GLAZE | 1.5K | 5% | 1/10W | |
| R405 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R407 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R408 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R409 | 1-216-121-00 | METAL GLAZE | 1M | 5% | 1/10W | |
| R410 | 1-216-011-00 | METAL GLAZE | 27 | 5% | 1/10W | |
| R411 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R415 | 1-216-085-00 | METAL GLAZE | 33K | 5% | 1/10W | |
| R416 | 1-216-059-00 | METAL GLAZE | 2.7K | 5% | 1/10W | |
| R417 | 1-216-089-00 | METAL GLAZE | 47K | 5% | 1/10W | |
| R418 | 1-216-061-00 | METAL GLAZE | 3.3K | 5% | 1/10W | |
| R419 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R421 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R422 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R423 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R430 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R431 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R501 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R502 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R503 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R504 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R505 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R506 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R507 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R508 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R509 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R510 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R511 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R512 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R513 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R514 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R515 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R516 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R517 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R518 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R519 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R520 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R521 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R522 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R523 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R524 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R525 | 1-216-691-11 | METAL CHIP | 47K | 0.50% | 1/10W | |
| R526 | 1-216-691-11 | METAL CHIP | 47K | 0.50% | 1/10W | |
| R528 | 1-216-117-00 | METAL GLAZE | 680K | 5% | 1/10W | |
| R530 | 1-216-077-00 | METAL GLAZE | 15K | 5% | 1/10W | |
| R531 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R532 | 1-216-069-00 | METAL GLAZE | 6.8K | 5% | 1/10W | |
| R533 | 1-216-109-00 | METAL GLAZE | 330K | 5% | 1/10W | |
| R534 | 1-216-085-00 | METAL GLAZE | 33K | 5% | 1/10W | |
| R535 | 1-216-121-00 | METAL GLAZE | 1M | 5% | 1/10W | |
| R536 | 1-216-075-00 | METAL GLAZE | 12K | 5% | 1/10W | |
| R537 | 1-216-085-00 | METAL GLAZE | 33K | 5% | 1/10W | |
| R538 | 1-216-077-00 | METAL GLAZE | 15K | 5% | 1/10W | |
| R539 | 1-216-121-00 | METAL GLAZE | 1M | 5% | 1/10W | |
| R540 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R541 | 1-216-089-00 | METAL GLAZE | 47K | 5% | 1/10W | |
| R542 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R543 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R544 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R545 | 1-216-113-00 | METAL GLAZE | 470K | 5% | 1/10W | |
| R546 | 1-216-089-00 | METAL GLAZE | 47K | 5% | 1/10W | |
| R547 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R548 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R549 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R550 | 1-216-113-00 | METAL GLAZE | 470K | 5% | 1/10W | |
| R551 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R552 | 1-216-105-00 | METAL GLAZE | 220K | 5% | 1/10W | |
| R553 | 1-216-105-00 | METAL GLAZE | 220K | 5% | 1/10W | |
| R554 | 1-216-182-00 | METAL GLAZE | 220 | 5% | 1/8W | |
| R555 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R556 | 1-216-071-00 | METAL GLAZE | 8.2K | 5% | 1/10W | |
| R557 | 1-216-051-00 | METAL GLAZE | 1.2K | 5% | 1/10W | |
| R558 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R559 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R560 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| R561 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R562 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R563 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R564 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R565 | 1-216-109-00 | METAL GLAZE 330K 5% 1/10W | |
| R566 | 1-216-121-00 | METAL GLAZE 1M 5% 1/10W | |
| R567 | 1-216-111-00 | METAL GLAZE 390K 5% 1/10W | |
| R568 | 1-216-113-00 | METAL GLAZE 470K 5% 1/10W | |
| R570 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R571 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R572 | 1-216-121-00 | METAL GLAZE 1M 5% 1/10W | |
| R574 | 1-216-047-00 | METAL GLAZE 820 5% 1/10W | |
| R575 | 1-216-101-00 | METAL GLAZE 150K 5% 1/10W | |
| R576 | 1-216-085-00 | METAL GLAZE 33K 5% 1/10W | |
| R577 | 1-216-081-00 | METAL GLAZE 22K 5% 1/10W | |
| R578 | 1-216-081-00 | METAL GLAZE 22K 5% 1/10W | |
| R579 | 1-216-025-00 | METAL GLAZE 100 5% 1/10W | |
| R580 | 1-216-035-00 | METAL GLAZE 270 5% 1/10W | |
| R581 | 1-216-077-00 | METAL GLAZE 15K 5% 1/10W | |
| R582 | 1-216-298-00 | METAL GLAZE 2.2 5% 1/10W | |
| R583 | 1-216-298-00 | METAL GLAZE 2.2 5% 1/10W | |
| R584 | 1-216-298-00 | METAL GLAZE 2.2 5% 1/10W | |
| R585 | 1-216-041-00 | METAL GLAZE 470 5% 1/10W | |
| R586 | 1-216-041-00 | METAL GLAZE 470 5% 1/10W | |
| R587 | 1-216-085-00 | METAL GLAZE 33K 5% 1/10W | |
| R588 | 1-216-748-11 | METAL GLAZE 39K 5% 1/10W | |
| R589 | 1-216-043-00 | METAL GLAZE 560 5% 1/10W | |
| R590 | 1-216-035-00 | METAL GLAZE 270 5% 1/10W | |
| R591 | 1-216-031-00 | METAL GLAZE 180 5% 1/10W | |
| R592 | 1-216-061-00 | METAL GLAZE 3.3K 5% 1/10W | |
| R593 | 1-216-071-00 | METAL GLAZE 8.2K 5% 1/10W | |
| R594 | 1-216-061-00 | METAL GLAZE 3.3K 5% 1/10W | |
| R595 | 1-216-061-00 | METAL GLAZE 3.3K 5% 1/10W | |
| R596 | 1-216-061-00 | METAL GLAZE 3.3K 5% 1/10W | |
| R597 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W | |
| R598 | 1-216-061-00 | METAL GLAZE 3.3K 5% 1/10W | |
| R599 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W | |
| R600 | 1-216-121-00 | METAL GLAZE 1M 5% 1/10W | |
| R601 | 1-216-051-00 | METAL GLAZE 1.2K 5% 1/10W | |
| R602 | 1-216-081-00 | METAL GLAZE 22K 5% 1/10W | |
| R603 | 1-216-081-00 | METAL GLAZE 22K 5% 1/10W | |
| R604 | 1-216-085-00 | METAL GLAZE 33K 5% 1/10W | |
| R605 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R606 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R607 | 1-216-021-00 | METAL GLAZE 68 5% 1/10W | |
| R608 | 1-216-029-00 | METAL GLAZE 150 5% 1/10W | |
| R609 | 1-216-069-00 | METAL GLAZE 6.8K 5% 1/10W | |
| R610 | 1-216-121-00 | METAL GLAZE 1M 5% 1/10W | |
| R611 | 1-216-083-00 | METAL GLAZE 27K 5% 1/10W | |
| R612 | 1-216-061-00 | METAL GLAZE 3.3K 5% 1/10W | |
| R613 | 1-216-083-00 | METAL GLAZE 27K 5% 1/10W | |
| R614 | 1-216-095-00 | METAL GLAZE 82K 5% 1/10W | |
| R615 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| R616 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R617 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R618 | 1-216-077-00 | METAL GLAZE 15K 5% 1/10W | |
| R619 | 1-216-109-00 | METAL GLAZE 330K 5% 1/10W | |
| R620 | 1-216-083-00 | METAL GLAZE 27K 5% 1/10W | |
| R621 | 1-216-089-00 | METAL GLAZE 47K 5% 1/10W | |
| R622 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R623 | 1-216-063-00 | METAL GLAZE 3.9K 5% 1/10W | |
| R624 | 1-216-069-00 | METAL GLAZE 6.8K 5% 1/10W | |
| R625 | 1-216-069-00 | METAL GLAZE 6.8K 5% 1/10W | |
| R626 | 1-216-063-00 | METAL GLAZE 3.9K 5% 1/10W | |
| R627 | 1-216-069-00 | METAL GLAZE 6.8K 5% 1/10W | |
| R628 | 1-216-057-00 | METAL GLAZE 2.2K 5% 1/10W | |
| R629 | 1-216-089-00 | METAL GLAZE 47K 5% 1/10W | |
| R630 | 1-216-045-00 | METAL GLAZE 680 5% 1/10W | |
| R631 | 1-216-067-00 | METAL GLAZE 5.6K 5% 1/10W | |
| R632 | 1-216-055-00 | METAL GLAZE 1.8K 5% 1/10W | |
| R633 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R634 | 1-216-033-00 | METAL GLAZE 220 5% 1/10W | |
| R635 | 1-216-057-00 | METAL GLAZE 2.2K 5% 1/10W | |
| R636 | 1-216-089-00 | METAL GLAZE 47K 5% 1/10W | |
| R637 | 1-216-045-00 | METAL GLAZE 680 5% 1/10W | |
| R638 | 1-216-067-00 | METAL GLAZE 5.6K 5% 1/10W | |
| R639 | 1-216-055-00 | METAL GLAZE 1.8K 5% 1/10W | |
| R640 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R641 | 1-216-136-00 | METAL GLAZE 2.7 5% 1/8W | |
| R642 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W | |
| R643 | 1-216-051-00 | METAL GLAZE 1.2K 5% 1/10W | |
| R644 | 1-216-069-00 | METAL GLAZE 6.8K 5% 1/10W | |
| R645 | 1-216-057-00 | METAL GLAZE 2.2K 5% 1/10W | |
| R652 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W | |
| R653 | 1-216-081-00 | METAL GLAZE 22K 5% 1/10W | |
| R654 | 1-216-081-00 | METAL GLAZE 22K 5% 1/10W | |
| R655 | 1-216-089-00 | METAL GLAZE 47K 5% 1/10W | |
| R656 | 1-216-089-00 | METAL GLAZE 47K 5% 1/10W | |
| R657 | 1-216-095-00 | METAL GLAZE 82K 5% 1/10W | |
| R658 | 1-216-095-00 | METAL GLAZE 82K 5% 1/10W | |
| R659 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R660 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R661 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R663 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R664 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R665 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R666 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R667 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R668 | 1-216-041-00 | METAL GLAZE 470 5% 1/10W | |
| R669 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R671 | 1-216-295-00 | METAL GLAZE 0 5% 1/10W | |

VARIABLE RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| RV101 | 1-230-873-11 | RES, ADJ, METAL GRAZE 47K | |
| RV102 | 1-230-873-11 | RES, ADJ, METAL GRAZE 47K | |
| RV501 | 1-230-874-11 | RES, ADJ, METAL GRAZE 100K | |

When indicating parts by reference number, please include the board name.

# CO-2 VK-1 CC-15 CD-10

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| RV502 | 1-230-876-11 | RES, ADJ, METAL GLAZE 470K | |
| RV551 | 1-238-225-11 | RES, ADJ, METAL GLAZE 47K | |
| RV621 | 1-230-869-11 | RES, ADJ, METAL GRAZE 4.7K | |
| | | FLAT CABLE | |
| W501 | 1-574-451-11 | CABLE, FLAT (1.0MM PITCH) 22P | |
| W502 | 1-574-451-11 | CABLE, FLAT (1.0MM PITCH) 22P | |
| | | CRYSTAL | |
| X501 | 1-577-116-21 | VIBRATOR, CRYSTAL (16MHZ) | |
| X502 | 1-567-700-12 | VIBRATOR, CRYSTAL (5.9MHX) | |

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*A-7061-440-A VK-1 BOARD, COMPLETE(Ref. No.
********************* 8000 series)

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| | | CONNECTOR | |
| CN508 | *1-566-182-11 | PIN, CONNECTOR (PC BOARD) 3P | |
| | | DIODE | |
| D501 | 8-719-100-05 | DIODE 1S2837 | |
| D502 | 8-719-100-03 | DIODE 1S2835 | |
| D503 | 8-719-100-03 | DIODE 1S2835 | |
| D504 | 8-719-801-41 | DIODE 1SS196 | |
| | | TRANSISTOR | |
| Q501 | 8-729-805-39 | TRANSISTOR 2SC3898 | |
| Q502 | 8-729-805-39 | TRANSISTOR 2SC3898 | |
| | | SWITCH | |
| S501 | 1-571-101-11 | SWITCH, SLIDE (POWER CAM/OFF/VTR) | |
| S502 | 1-570-909-21 | SWITCH, TACTIL (REFLOW TYPE) (REW ◀◀) | |
| S503 | 1-570-909-21 | SWITCH, TACTIL (REFLOW TYPE) ( ▷ ) | |
| S504 | 1-570-909-21 | SWITCH, TACTIL (REFLOW TYPE) (FF ▶▶) | |
| S505 | 1-570-909-21 | SWITCH, TACTIL (REFLOW TYPE) ( □ ) | |
| S506 | 1-570-909-21 | SWITCH, TACTIL (REFLOW TYPE) ( ▯▯ ) | |
| S507 | 1-571-102-21 | SWITCH, SLIDE ( ● REC) | |
| S508 | 1-571-102-11 | SWITCH, SLIDE (EJECT) | |
| S509 | 1-570-909-21 | SWITCH, TACTIL (REFLOW TYPE) (DATA SCREEN) | |
| S510 | 1-553-977-00 | SWITCH, SLIDE (EDIT) | |
| | | FLAT CABLE | |
| W507 | 1-574-457-11 | CABLE, FLAT (1.0MM PITCH) 12P | |

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*A-7061-441-A CC-15 BOARD, COMPLETE(Ref. No.
********************** 7000 series)

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| | | CAPACITOR | |
| C001 | 1-162-638-11 | CERAMIC CHIP 1MF | 16V |
| C002 | 1-162-638-11 | CERAMIC CHIP 1MF | 16V |
| C003 | 1-163-038-00 | CERAMIC CHIP 0.1MF | 25V |
| | | CONNECTOR | |
| CN001 | 1-566-529-11 | CONNECTOR, FPC (ZIF) 13P | |
| CN002 | 1-566-527-11 | CONNECTOR, FPC (ZIF) 11P | |
| | | DIODE | |
| D001 | 8-719-801-41 | DIODE 1SS196 | |
| D002 | 8-719-801-41 | DIODE 1SS196 | |
| D003 | 8-719-801-41 | DIODE 1SS196 | |
| | | IC | |
| IC001 | 8-759-100-93 | IC UPC393G2 | |
| | | TRANSISTOR | |
| Q002 | 8-729-805-39 | TRANSISTOR 2SC3898 | |
| Q004 | 8-729-805-39 | TRANSISTOR 2SC3898 | |
| Q005 | 8-729-805-39 | TRANSISTOR 2SC3898 | |
| Q006 | 8-729-805-41 | TRANSISTOR 2SC3398 | |
| | | RESISTOR | |
| R001 | 1-216-061-00 | METAL GLAZE 3.3K 5% 1/10W | |
| R002 | 1-216-109-00 | METAL GLAZE 330K 5% 1/10W | |
| R003 | 1-216-109-00 | METAL GLAZE 330K 5% 1/10W | |
| R004 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R005 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R006 | 1-216-089-00 | METAL GLAZE 47K 5% 1/10W | |
| R007 | 1-216-174-00 | METAL GLAZE 100 5% 1/8W | |
| R008 | 1-216-041-00 | METAL GLAZE 470 5% 1/10W | |
| R009 | 1-216-121-00 | METAL GLAZE 1M 5% 1/10W | |
| R010 | 1-216-121-00 | METAL GLAZE 1M 5% 1/10W | |
| R011 | 1-216-089-00 | METAL GLAZE 47K 5% 1/10W | |
| R012 | 1-216-109-00 | METAL GLAZE 330K 5% 1/10W | |
| R013 | 1-216-109-00 | METAL GLAZE 330K 5% 1/10W | |
| R014 | 1-216-061-00 | METAL GLAZE 3.3K 5% 1/10W | |
| R015 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R016 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| | | FLAT CABLE | |
| W501 | 1-574-457-11 | CABLE, FLAT (1.0MM PITCH) 13P | |

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*A-7061-444-A CD-10 BOARD, COMPLETE(Ref. No.
********************** 1000 series)

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| | | CAPACITOR | |
| C601 | 1-126-193-11 | ELECT 1MF 20% | 50V |
| C602 | 1-126-208-11 | ELECT 47MF 20% | 4V |
| C603 | 1-126-196-11 | ELECT 3.3MF 20% | 50V |
| C604 | 1-126-196-11 | ELECT 3.3MF 20% | 50V |
| C606 | 1-164-161-11 | CERAMIC CHIP 0.0022MF 10% | 50V |

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C607 | 1-164-161-11 | CERAMIC CHIP | 0.0022MF | 10% | 50V |
| C608 | 1-164-005-11 | CERAMIC CHIP | 0.47MF | | 25V |
| C610 | 1-135-145-11 | TANTAL. CHIP | 0.47MF | 20% | 25V |
| C611 | 1-164-161-11 | CERAMIC CHIP | 0.0022MF | 10% | 50V |
| C612 | 1-163-016-00 | CERAMIC CHIP | 0.0039MF | 10% | 50V |
| C613 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C614 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C615 | 1-163-009-11 | CERAMIC CHIP | 0.001MF | 10% | 50V |
| C617 | 1-163-023-00 | CERAMIC CHIP | 0.015MF | 10% | 50V |
| C618 | 1-163-036-00 | CERAMIC CHIP | 0.068MF | | 50V |
| C619 | 1-126-197-21 | ELECT | 10MF | 20% | 50V |
| C620 | 1-163-036-00 | CERAMIC CHIP | 0.068MF | | 50V |
| C621 | 1-164-161-11 | CERAMIC CHIP | 0.0022MF | 10% | 50V |

### CONNECTOR

| Ref.No | Part No. | Description |
|---|---|---|
| CN601 | *1-566-195-11 | PIN, CONNECTOR (PC BOARD) 2P |
| CN602 | *1-566-196-11 | PIN, CONNECTOR (PC BOARD) 3P |
| CN603 | *1-566-195-21 | PIN, CONNECTOR (PC BOARD) 2P |
| CN604 | *1-566-197-11 | PIN, CONNECTOR (PC BOARD) 4P |
| CN605 | 1-568-164-11 | CONNECTOR, FPC (1.0MM) (ZIF) 8P |

### DIODE

| Ref.No | Part No. | Description |
|---|---|---|
| D601 | 8-719-100-05 | DIODE 1S2837 |
| D602 | 8-719-100-03 | DIODE 1S2835 |
| D603 | 8-719-100-05 | DIODE 1S2837 |
| D604 | 8-719-100-05 | DIODE 1S2837 |

### COIL

| Ref.No | Part No. | Description |
|---|---|---|
| L601 | 1-410-393-11 | INDUCTOR CHIP 100UH |

### TRANSISTOR

| Ref.No | Part No. | Description |
|---|---|---|
| Q601 | 8-729-105-53 | TRANSISTOR 2SK300 |
| Q602 | 8-729-100-66 | TRANSISTOR 2SC1623 |
| Q603 | 8-729-100-66 | TRANSISTOR 2SC1623 |
| Q604 | 8-729-100-66 | TRANSISTOR 2SC1623 |
| Q605 | 8-729-100-66 | TRANSISTOR 2SC1623 |
| Q606 | 8-729-100-75 | TRANSISTOR 2SA812-M5 |
| Q607 | 8-729-104-26 | TRANSISTOR 2SB804-AW |
| Q608 | 8-729-103-72 | TRANSISTOR 2SD1005 |
| Q609 | 8-729-100-75 | TRANSISTOR 2SA812-M5 |
| Q610 | 8-729-100-66 | TRANSISTOR 2SC1623 |

### RESISTOR

| Ref.No | Part No. | Description | | | |
|---|---|---|---|---|---|
| R601 | 1-216-025-00 | METAL GLAZE | 100 | 5% | 1/10W |
| R602 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W |
| R603 | 1-216-063-00 | METAL GLAZE | 3.9K | 5% | 1/10W |
| R604 | 1-216-075-00 | METAL GLAZE | 12K | 5% | 1/10W |
| R605 | 1-216-079-00 | METAL GLAZE | 18K | 5% | 1/10W |
| R606 | 1-216-041-00 | METAL GLAZE | 470 | 5% | 1/10W |
| R607 | 1-216-121-00 | METAL GLAZE | 1M | 5% | 1/10W |
| R608 | 1-216-045-00 | METAL GLAZE | 680 | 5% | 1/10W |
| R609 | 1-216-091-00 | METAL GLAZE | 56K | 5% | 1/10W |
| R610 | 1-216-077-00 | METAL GLAZE | 15K | 5% | 1/10W |
| R611 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W |
| R612 | 1-216-095-00 | METAL GLAZE | 82K | 5% | 1/10W |
| R613 | 1-216-095-00 | METAL GLAZE | 82K | 5% | 1/10W |
| R614 | 1-216-077-00 | METAL GLAZE | 15K | 5% | 1/10W |
| R615 | 1-216-109-00 | METAL GLAZE | 330K | 5% | 1/10W |
| R616 | 1-216-005-00 | METAL GLAZE | 15 | 5% | 1/10W |
| R617 | 1-216-005-00 | METAL GLAZE | 15 | 5% | 1/10W |
| R618 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W |
| R619 | 1-216-085-00 | METAL GLAZE | 33K | 5% | 1/10W |
| R620 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W |
| R621 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W |
| R622 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W |

### FLAT CABLE

| Ref.No | Part No. | Description |
|---|---|---|
| W601 | 1-574-462-11 | CABLE, FLAT (1.0MM PITCH) 15P |
| W603 | 1-574-455-11 | CABLE, FLAT (1.0MM PITCH) 14P |

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*A-7061-553-A CV-8 BOARD, COMPLETE(Ref. No.
*********************  2000 series)

A-7068-128-A MX-7 BOARD, COMPLETE (HIC)
A-7068-150-A DT-73 BOARD, COMPLETE (HIC)

### CAPACITOR

| Ref.No | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C201 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C202 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C203 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C204 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C205 | 1-126-191-11 | ELECT | 0.47MF | 20% | 50V |
| C206 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C209 | 1-126-205-11 | ELECT | 47MF | 20% | 6.3V |
| C210 | 1-126-191-11 | ELECT | 0.47MF | 20% | 50V |
| C211 | 1-163-809-11 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C212 | 1-126-191-11 | ELECT | 0.47MF | 20% | 50V |
| C213 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C214 | 1-126-246-11 | ELECT | 220MF | 20% | 4V |
| C215 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | | 50V |
| C216 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C217 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C218 | 1-126-192-11 | ELECT | 0.68MF | 20% | 50V |
| C219 | 1-126-195-11 | ELECT | 2.2MF | 20% | 50V |
| C220 | 1-163-117-00 | CERAMIC CHIP | 100PF | 5% | 50V |
| C221 | 1-163-117-00 | CERAMIC CHIP | 100PF | 5% | 50V |
| C224 | 1-126-193-11 | ELECT | 1MF | 20% | 50V |
| C225 | 1-126-195-11 | ELECT | 2.2MF | 20% | 50V |
| C226 | 1-126-198-11 | ELECT | 4.7MF | 20% | 35V |
| C227 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C228 | 1-126-196-11 | ELECT | 3.3MF | 20% | 50V |
| C229 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | | 50V |
| C230 | 1-126-193-11 | ELECT | 1MF | 20% | 50V |
| C231 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | | 50V |
| C232 | 1-126-196-11 | ELECT | 3.3MF | 20% | 50V |
| C233 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C234 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |

When indicating parts by reference number, please include the board name.

## CV-8

| Ref.No | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C235 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C236 | 1-126-193-11 | ELECT | 1MF | 20% | 50V |
| C237 | 1-126-193-11 | ELECT | 1MF | 20% | 50V |
| C238 | 1-126-196-11 | ELECT | 3.3MF | 20% | 50V |
| C239 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C240 | 1-126-193-11 | ELECT | 1MF | 20% | 50V |
| C241 | 1-126-193-11 | ELECT | 1MF | 20% | 50V |
| C242 | 1-126-193-11 | ELECT | 1MF | 20% | 50V |
| C243 | 1-126-193-11 | ELECT | 1MF | 20% | 50V |
| C244 | 1-126-196-11 | ELECT | 3.3MF | 20% | 50V |
| C245 | 1-126-100-11 | ELECT | 10MF | 20% | 6.3V |
| C246 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C247 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C248 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C249 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C250 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C251 | 1-163-141-00 | CERAMIC CHIP | 0.001MF | 5% | 50V |
| C252 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C253 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | | 50V |
| C254 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C255 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C256 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C257 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C258 | 1-163-133-00 | CERAMIC CHIP | 470PF | 5% | 50V |
| C259 | 1-163-131-00 | CERAMIC CHIP | 390PF | 5% | 50V |
| C260 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C261 | 1-163-117-00 | CERAMIC CHIP | 100PF | 5% | 50V |
| C262 | 1-163-118-00 | CERAMIC CHIP | 110PF | 5% | 50V |
| C264 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C265 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C267 | 1-163-115-00 | CERAMIC CHIP | 82PF | 5% | 50V |
| C268 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C269 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C270 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C271 | 1-163-095-00 | CERAMIC CHIP | 12PF | 5% | 50V |
| C273 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C274 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C276 | 1-124-778-00 | ELECT | 22MF | 20% | 6.3V |
| C277 | 1-126-191-11 | ELECT | 0.47MF | 20% | 50V |
| C278 | 1-163-129-00 | CERAMIC CHIP | 330PF | 5% | 50V |
| C279 | 1-163-113-00 | CERAMIC CHIP | 68PF | 5% | 50V |
| C280 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | | 50V |
| C281 | 1-124-778-00 | ELECT | 22MF | 20% | 6.3V |
| C287 | 1-126-100-11 | ELECT | 10MF | 20% | 6.3V |
| C288 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | | 50V |
| C289 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C291 | 1-163-033-00 | CERAMIC CHIP | 0.022MF | | 50V |
| C292 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C293 | 1-163-095-00 | CERAMIC CHIP | 12PF | 5% | 50V |
| C294 | 1-163-033-00 | CERAMIC CHIP | 0.022MF | | 50V |
| C295 | 1-163-101-00 | CERAMIC CHIP | 22PF | 5% | 50V |
| C296 | 1-163-105-00 | CERAMIC CHIP | 33PF | 5% | 50V |
| C297 | 1-163-101-00 | CERAMIC CHIP | 22PF | 5% | 50V |

| Ref.No | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C298 | 1-163-986-00 | CERAMIC CHIP | 0.027MF | 10% | 25V |
| C300 | 1-164-161-11 | CERAMIC CHIP | 0.0022MF | 10% | 50V |
| C301 | 1-163-105-00 | CERAMIC CHIP | 33PF | 5% | 50V |
| C302 | 1-163-109-00 | CERAMIC CHIP | 47PF | 5% | 50V |
| C304 | 1-163-127-00 | CERAMIC CHIP | 270PF | 5% | 50V |
| C305 | 1-163-133-00 | CERAMIC CHIP | 470PF | 5% | 50V |
| C306 | 1-124-778-00 | ELECT | 22MF | 20% | 6.3V |
| C307 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | | 50V |
| C308 | 1-163-107-00 | CERAMIC CHIP | 39PF | 5% | 50V |
| C309 | 1-163-097-00 | CERAMIC CHIP | 15PF | 5% | 50V |
| C310 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C311 | 1-163-109-00 | CERAMIC CHIP | 47PF | 5% | 50V |
| C312 | 1-163-123-00 | CERAMIC CHIP | 180PF | 5% | 50V |
| C313 | 1-163-116-00 | CERAMIC CHIP | 91PF | 5% | 50V |
| C314 | 1-163-109-00 | CERAMIC CHIP | 47PF | 5% | 50V |
| C315 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C316 | 1-163-115-00 | CERAMIC CHIP | 82PF | 5% | 50V |
| C317 | 1-163-015-00 | CERAMIC CHIP | 0.0033MF | 10% | 50V |
| C327 | 1-163-109-00 | CERAMIC CHIP | 47PF | 5% | 50V |
| C333 | 1-126-193-11 | ELECT | 1MF | 20% | 50V |
| C350 | 1-163-121-00 | CERAMIC CHIP | 150PF | 5% | 50V |
| C351 | 1-163-101-00 | CERAMIC CHIP | 22PF | 5% | 50V |
| C352 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C353 | 1-163-127-00 | CERAMIC CHIP | 270PF | 5% | 50V |
| C355 | 1-163-117-00 | CERAMIC CHIP | 100PF | 5% | 50V |
| C356 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C357 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C360 | 1-163-117-00 | CERAMIC CHIP | 100PF | 5% | 50V |
| C362 | 1-163-099-00 | CERAMIC CHIP | 18PF | 5% | 50V |
| C363 | 1-163-133-00 | CERAMIC CHIP | 470PF | 5% | 50V |
| C364 | 1-164-004-11 | CERAMIC CHIP | 0.1MF | 10% | 25V |
| C365 | 1-163-093-00 | CERAMIC CHIP | 10PF | 5% | 50V |
| C367 | 1-163-141-00 | CERAMIC CHIP | 0.001MF | 5% | 50V |
| C368 | 1-164-004-11 | CERAMIC CHIP | 0.1MF | 10% | 25V |
| C369 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C370 | 1-164-004-11 | CERAMIC CHIP | 0.1MF | 10% | 25V |
| C371 | 1-164-004-11 | CERAMIC CHIP | 0.1MF | 10% | 25V |
| C374 | 1-164-161-11 | CERAMIC CHIP | 0.0022MF | 10% | 50V |
| C501 | 1-163-105-00 | CERAMIC CHIP | 33PF | 5% | 50V |
| C502 | 1-163-117-00 | CERAMIC CHIP | 100PF | 5% | 50V |
| C503 | 1-163-109-00 | CERAMIC CHIP | 47PF | 5% | 50V |
| C506 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | | 50V |
| C507 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C508 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C509 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C510 | 1-163-009-11 | CERAMIC CHIP | 0.001MF | 10% | 50V |
| C511 | 1-163-141-00 | CERAMIC CHIP | 0.001MF | 5% | 50V |
| C512 | 1-163-123-00 | CERAMIC CHIP | 180PF | 5% | 50V |
| C513 | 1-163-093-00 | CERAMIC CHIP | 10PF | 5% | 50V |
| C514 | 1-163-133-00 | CERAMIC CHIP | 470PF | 10% | 50V |
| C601 | 1-135-145-11 | TANTAL. CHIP | 0.47MF | 20% | 25V |
| C602 | 1-164-161-11 | CERAMIC CHIP | 0.0022MF | 10% | 50V |
| C603 | 1-164-161-11 | CERAMIC CHIP | 0.0022MF | 10% | 50V |

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C604 | 1-162-638-11 | CERAMIC CHIP | 1MF | | 16V |
| C605 | 1-162-638-11 | CERAMIC CHIP | 1MF | | 16V |
| C606 | 1-163-100-00 | CERAMIC CHIP | 20PF | 5% | 50V |
| C607 | 1-163-118-00 | CERAMIC CHIP | 110PF | 5% | 50V |
| C608 | 1-163-114-00 | CERAMIC CHIP | 75PF | 5% | 50V |
| C609 | 1-163-100-00 | CERAMIC CHIP | 20PF | 5% | 50V |
| C610 | 1-163-118-00 | CERAMIC CHIP | 110PF | 5% | 50V |
| C611 | 1-163-114-00 | CERAMIC CHIP | 75PF | 5% | 50V |
| C612 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C613 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C614 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C615 | 1-163-097-00 | CERAMIC CHIP | 15PF | 5% | 50V |
| C616 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C617 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C618 | 1-163-093-00 | CERAMIC CHIP | 10PF | 5% | 50V |
| C619 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C621 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C622 | 1-163-095-00 | CERAMIC CHIP | 12PF | 5% | 50V |
| C623 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C624 | 1-163-109-00 | CERAMIC CHIP | 47PF | 5% | 50V |
| C626 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C627 | 1-163-133-00 | CERAMIC CHIP | 470PF | 10% | 50V |
| C628 | 1-163-133-00 | CERAMIC CHIP | 470PF | 10% | 50V |
| C629 | 1-163-133-00 | CERAMIC CHIP | 470PF | 10% | 50V |
| C631 | 1-164-161-11 | CERAMIC CHIP | 0.0022MF | 10% | 50V |
| C632 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C636 | 1-126-205-11 | ELECT | 47MF | 20% | 6.3V |
| C637 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C638 | 1-164-161-11 | CERAMIC CHIP | 0.0022MF | 10% | 50V |
| C639 | 1-126-199-11 | ELECT | 6.8MF | 20% | 35V |
| C640 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C641 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C642 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C647 | 1-124-778-00 | ELECT | 22MF | 20% | 6.3V |
| C648 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C650 | 1-163-109-00 | CERAMIC CHIP | 47PF | 5% | 50V |
| C651 | 1-163-109-00 | CERAMIC CHIP | 47PF | 5% | 50V |
| C652 | 1-163-109-00 | CERAMIC CHIP | 47PF | 5% | 50V |
| C653 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C654 | 1-164-161-11 | CERAMIC CHIP | 0.0022MF | 10% | 50V |
| C655 | 1-164-161-11 | CERAMIC CHIP | 0.0022MF | 10% | 50V |
| C656 | 1-163-101-00 | CERAMIC CHIP | 22PF | 5% | 50V |
| C658 | 1-162-638-11 | CERAMIC CHIP | 1MF | | 16V |
| C660 | 1-162-638-11 | CERAMIC CHIP | 1MF | | 16V |
| C661 | 1-163-809-11 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C662 | 1-162-638-11 | CERAMIC CHIP | 1MF | | 16V |
| C665 | 1-162-638-11 | CERAMIC CHIP | 1MF | | 16V |
| C666 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C669 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C672 | 1-163-131-00 | CERAMIC CHIP | 390PF | 5% | 50V |
| C673 | 1-163-131-00 | CERAMIC CHIP | 390PF | 5% | 50V |
| C674 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C675 | 1-163-009-11 | CERAMIC CHIP | 0.001MF | 10% | 50V |

| Ref.No | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C676 | 1-163-101-00 | CERAMIC CHIP | 22PF | 5% | 50V |
| C677 | 1-164-161-11 | CERAMIC CHIP | 0.0022MF | 10% | 50V |
| C679 | 1-164-161-11 | CERAMIC CHIP | 0.0022MF | 10% | 50V |
| C690 | 1-164-005-11 | CERAMIC CHIP | 0.47MF | | 25V |
| C691 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C692 | 1-135-091-00 | TANTAL. CHIP | 1MF | 20% | 16V |
| C693 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C694 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C695 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C696 | 1-163-109-00 | CERAMIC CHIP | 47PF | 5% | 50V |
| C697 | 1-163-111-00 | CERAMIC CHIP | 56PF | 5% | 50V |
| C699 | 1-164-161-11 | CERAMIC CHIP | 0.0022MF | 10% | 50V |
| C700 | 1-162-638-11 | CERAMIC CHIP | 1MF | | 16V |
| C701 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C702 | 1-162-638-11 | CERAMIC CHIP | 1MF | | 16V |
| C703 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C704 | 1-124-566-11 | ELECT | 120MF | 20% | 6.3V |
| C705 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C706 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C707 | 1-135-145-11 | TANTAL. CHIP | 0.47MF | 20% | 25V |
| C708 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | | 50V |
| C709 | 1-163-093-00 | CERAMIC CHIP | 10PF | 5% | 50V |
| C710 | 1-164-005-11 | CERAMIC CHIP | 0.47MF | | 25V |
| C712 | 1-126-205-11 | ELECT | 47MF | 20% | 6.3V |
| C713 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C714 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | | 50V |
| C715 | 1-163-009-11 | CERAMIC CHIP | 0.001MF | 10% | 50V |
| C716 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C718 | 1-126-196-11 | ELECT | 3.3MF | 20% | 50V |
| C719 | 1-135-072-21 | TANTAL. CHIP | 0.22MF | 20% | 35V |
| C721 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C722 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C723 | 1-126-196-11 | ELECT | 3.3MF | 20% | 50V |
| C724 | 1-126-196-11 | ELECT | 3.3MF | 20% | 50V |
| C725 | 1-162-638-11 | CERAMIC CHIP | 1MF | | 16V |
| C726 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C727 | 1-126-196-11 | ELECT | 3.3MF | 20% | 50V |
| C729 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C730 | 1-162-638-11 | CERAMIC CHIP | 1MF | | 16V |
| C731 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C733 | 1-126-196-11 | ELECT | 3.3MF | 20% | 50V |
| C735 | 1-126-206-11 | ELECT | 100MF | 20% | 6.3V |
| C736 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C741 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | 10% | 50V |
| C798 | 1-164-161-11 | CERAMIC CHIP | 0.0022MF | 10% | 50V |
| C799 | 1-164-161-11 | CERAMIC CHIP | 0.0022MF | 10% | 50V |
| C801 | 1-124-779-00 | ELECT | 10MF | 20% | 16V |
| C802 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C803 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C804 | 1-164-161-11 | CERAMIC CHIP | 0.0022MF | 10% | 50V |
| C805 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C806 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |
| C807 | 1-163-021-00 | CERAMIC CHIP | 0.01MF | | 50V |

When indicating parts by reference number, please include the board name.

## CV-8

| Ref.No | Part No. | Description | | Remark |
|---|---|---|---|---|
| C808 | 1-163-038-00 | CERAMIC CHIP 0.1MF | | 25V |
| C809 | 1-163-115-00 | CERAMIC CHIP 82PF | 5% | 50V |
| C810 | 1-163-119-00 | CERAMIC CHIP 120PF | 5% | 50V |
| C811 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V |
| C812 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V |
| C813 | 1-162-638-11 | CERAMIC CHIP 1MF | | 16V |
| C814 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C815 | 1-163-038-00 | CERAMIC CHIP 0.1MF | | 25V |
| C817 | 1-163-038-00 | CERAMIC CHIP 0.1MF | | 25V |
| C818 | 1-162-638-11 | CERAMIC CHIP 1MF | | 16V |
| C819 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C820 | 1-163-038-00 | CERAMIC CHIP 0.1MF | | 25V |
| C821 | 1-163-038-00 | CERAMIC CHIP 0.1MF | | 25V |
| C822 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C824 | 1-162-638-11 | CERAMIC CHIP 1MF | | 16V |
| C825 | 1-162-637-11 | CERAMIC CHIP 0.47MF | | 16V |
| C826 | 1-162-637-11 | CERAMIC CHIP 0.47MF | | 16V |
| C827 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C828 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C829 | 1-163-125-00 | CERAMIC CHIP 220PF | 5% | 50V |
| C830 | 1-163-038-00 | CERAMIC CHIP 0.1MF | | 25V |
| C832 | 1-164-005-11 | CERAMIC CHIP 0.47MF | | 25V |
| C835 | 1-163-033-00 | CERAMIC CHIP 0.022MF | | 50V |
| C836 | 1-163-021-00 | CERAMIC CHIP 0.01MF | 10% | 50V |
| C837 | 1-163-021-00 | CERAMIC CHIP 0.01MF | 10% | 50V |
| C838 | 1-163-093-00 | CERAMIC CHIP 10PF | 5% | 50V |
| C839 | 1-163-021-00 | CERAMIC CHIP 0.01MF | 10% | 50V |
| C840 | 1-164-161-11 | CERAMIC CHIP 0.0022MF | 10% | 50V |
| C841 | 1-163-033-00 | CERAMIC CHIP 0.022MF | | 50V |
| C842 | 1-163-021-00 | CERAMIC CHIP 0.01MF | | 50V |
| C843 | 1-124-779-00 | ELECT 10MF | 20% | 16V |
| C844 | 1-126-205-11 | ELECT 47MF | 20% | 6.3V |
| C845 | 1-163-009-11 | CERAMIC CHIP 0.001MF | 10% | 50V |
| C846 | 1-163-038-00 | CERAMIC CHIP 0.1MF | | 25V |
| C848 | 1-163-038-00 | CERAMIC CHIP 0.1MF | | 25V |
| C849 | 1-164-005-11 | CERAMIC CHIP 0.47MF | | 25V |
| | | CONNECTOR | | |
| CN202 | *1-565-541-11 | PIN, CONNECTOR (PC BOARD) 2P | | |
| CN501 | 1-568-165-11 | CONNECTOR, FPC (1.0MM) (ZIF) 22P | | |
| CN502 | 1-568-165-11 | CONNECTOR, FPC (1.0MM) (ZIF) 22P | | |
| CN601 | 1-566-547-11 | CONNECTOR, FPC (NON ZIF) 15P | | |
| CN602 | 1-565-527-11 | PIN, CONNECTOR (PC BOARD) 2P | | |
| CN801 | 1-566-530-11 | CONNECTOR, FPC (ZIF) 14P | | |
| CN802 | 1-568-207-11 | CONNECTOR, FPC (ZIF) 23P | | |
| CN803 | *1-565-543-11 | PIN, CONNECTOR (PC BOARD) 4P | | |
| CN901 | *1-566-759-11 | PIN, CONNECTOR (PC BOARD) 4P | | |
| | | TRIMMER | | |
| CV501 | 1-141-331-11 | CAP, VAR, TRIMMER (CHIP) (30PF) | | |
| CV502 | 1-141-331-11 | CAP, VAR, TRIMMER (CHIP) (30PF) | | |

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| | | DIODE | |
| D210 | 8-719-800-76 | DIODE 1SS226 | |
| D211 | 8-719-800-76 | DIODE 1SS226 | |
| D213 | 8-719-100-05 | DIODE 1S2837 | |
| D214 | 8-719-940-45 | DIODE DWA010 | |
| D215 | 8-719-940-45 | DIODE DWA010 | |
| D216 | 8-719-100-05 | DIODE 1S2837 | |
| D501 | 8-713-220-00 | DIODE 1T32-2 | |
| D601 | 8-719-100-03 | DIODE 1S2835 | |
| D602 | 8-719-100-05 | DIODE 1S2837 | |
| D604 | 8-719-100-05 | DIODE 1S2837 | |
| D606 | 8-719-100-05 | DIODE 1S2837 | |
| D804 | 8-719-100-05 | DIODE 1S2837 | |
| D805 | 8-719-100-05 | DIODE 1S2837 | |
| | | FILTER | |
| FL201 | 1-409-439-11 | FILTER, TRAP | |
| FL202 | 1-236-146-11 | FILTER, BAND PASS | |
| FL203 | 1-567-727-11 | FILTER, CERAMIC | |
| FL601 | 1-236-189-11 | FILTER, LOW PASS | |
| FL602 | 1-236-374-11 | LPF, YDL | |
| FL603 | 1-236-375-11 | LPF, YDL | |
| FL604 | 1-236-192-11 | FILTER, LOW PASS | |
| FL606 | 1-415-554-21 | DELAY LINE, LC | |
| FL801 | 1-236-209-11 | FILTER, LOW PASS | |
| | | IC | |
| IC201 | 8-752-033-40 | IC CXA1201Q-T3 | |
| IC202 | 8-752-323-46 | IC CXL1501M | |
| IC203 | 8-752-034-40 | IC CXA1200BQ | |
| IC501 | 8-759-140-26 | IC UPD6145G-601 | |
| IC502 | 8-759-970-80 | IC MB673198U | |
| IC601 | 8-759-031-48 | IC MC68HC05N4-SC406656 | |
| IC602 | 8-759-008-68 | IC MC14066BF-T1 | |
| IC603 | 8-759-100-95 | IC UPC324G2 | |
| IC604 | 8-752-326-08 | IC CXD1159Q-T3 | |
| IC605 | 8-752-034-22 | IC CXA1339R-T3 | |
| IC606 | 8-752-033-34 | IC CXA1072R-T3 | |
| IC608 | 8-759-946-00 | IC MB88341PFV | |
| IC609 | 8-759-946-00 | IC MB88341PFV | |
| IC610 | 8-759-937-56 | IC S-8054ALB-LM-S | |
| IC801 | 8-752-326-18 | IC CXD1204R-T3 | |
| IC802 | 8-759-031-63 | IC MC68HC05C4-SC403717 | |
| IC803 | 8-759-971-93 | IC MSM6219GS-VK | |
| IC804 | 8-759-946-00 | IC MB88341PFV | |
| IC805 | 8-759-030-35 | IC MPC1725MR | |
| IC806 | 8-759-100-94 | IC UPC358G2 | |
| IC807 | 8-759-701-24 | IC NJM3414M | |
| IC808 | 8-759-100-94 | IC UPC358G2 | |
| IC810 | 8-759-231-23 | IC TK10500M | |

When indicating parts by reference number, please include the board name.

### JACK

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| J201 | 1-537-142-11 | TERMINAL BOARD (AUDIO/RFU DC/VIDEO OUT) | |
| J202 | 1-568-409-11 | JACK, PIN 2P (VIDEO/AUDIO IN) | |

### COIL

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| L201 | 1-412-032-21 | INDUCTOR CHIP 100UH | |
| L203 | 1-412-032-21 | INDUCTOR CHIP 100UH | |
| L204 | 1-412-031-11 | INDUCTOR CHIP 47UH | |
| L205 | 1-412-031-11 | INDUCTOR CHIP 47UH | |
| L206 | 1-410-388-21 | INDUCTOR CHIP 39UH | |
| L207 | 1-410-385-11 | INDUCTOR CHIP 22UH | |
| L208 | 1-412-029-11 | INDUCTOR CHIP 10UH | |
| L209 | 1-412-032-21 | INDUCTOR CHIP 100UH | |
| L210 | 1-410-387-11 | INDUCTOR CHIP 33UH | |
| L211 | 1-410-656-11 | INDUCTOR CHIP 150UH | |
| L212 | 1-410-381-11 | INDUCTOR CHIP 10UH | |
| L214 | 1-408-797-11 | INDUCTOR CHIP 470UH | |
| L215 | 1-408-795-21 | INDUCTOR CHIP 330UH | |
| L216 | 1-408-795-21 | INDUCTOR CHIP 330UH | |
| L217 | 1-410-657-21 | INDUCTOR CHIP 180UH | |
| L219 | 1-412-032-21 | INDUCTOR CHIP 100UH | |
| L220 | 1-410-380-31 | INDUCTOR CHIP 8.2UH | |
| L221 | 1-408-795-21 | INDUCTOR CHIP 330UH | |
| L222 | 1-410-655-11 | INDUCTOR CHIP 120UH | |
| L223 | 1-410-393-11 | INDUCTOR CHIP 100UH | |
| L224 | 1-410-656-11 | INDUCTOR CHIP 150UH | |
| L227 | 1-410-389-11 | INDUCTOR CHIP 47UH | |
| L228 | 1-410-388-21 | INDUCTOR CHIP 39UH | |
| L229 | 1-410-392-11 | INDUCTOR CHIP 82UH | |
| L230 | 1-410-383-11 | INDUCTOR CHIP 15UH | |
| L231 | 1-412-026-11 | INDUCTOR CHIP 1UH | |
| L501 | 1-410-390-11 | INDUCTOR CHIP 56UH | |
| L502 | 1-412-032-21 | INDUCTOR CHIP 100UH | |
| L503 | 1-408-797-11 | INDUCTOR CHIP 470UH | |
| L601 | 1-412-031-11 | INDUCTOR CHIP 47UH | |
| L602 | 1-410-381-11 | INDUCTOR CHIP 10UH | |
| L603 | 1-412-031-11 | INDUCTOR CHIP 47UH | |
| L604 | 1-412-026-11 | INDUCTOR CHIP 1UH | |
| L605 | 1-412-026-11 | INDUCTOR CHIP 1UH | |
| L606 | 1-412-026-11 | INDUCTOR CHIP 1UH | |
| L607 | 1-412-032-21 | INDUCTOR CHIP 100UH | |
| L608 | 1-412-029-11 | INDUCTOR CHIP 10UH | |
| L609 | 1-410-393-11 | INDUCTOR CHIP 100UH | |
| L610 | 1-412-029-11 | INDUCTOR CHIP 10UH | |
| L612 | 1-412-029-11 | INDUCTOR CHIP 10UH | |
| L613 | 1-412-031-11 | INDUCTOR CHIP 47UH | |
| L614 | 1-410-657-21 | INDUCTOR CHIP 180UH | |
| L801 | 1-410-655-11 | INDUCTOR CHIP 120UH | |

### TRANSISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| Q202 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q203 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q204 | 8-729-106-60 | TRANSISTOR 2SB1115A | |
| Q206 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q207 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q210 | 8-729-101-07 | TRANSISTOR 2SB798 | |
| Q211 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q212 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q213 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q214 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q215 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q216 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q217 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q219 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q222 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q223 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q224 | 8-729-402-19 | TRANSISTOR 2SC2404-C-TX | |
| Q225 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q226 | 8-729-901-06 | TRANSISTOR DTA144EK | |
| Q227 | 8-729-901-06 | TRANSISTOR DTA144EK | |
| Q228 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q229 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q230 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q231 | 8-729-402-19 | TRANSISTOR 2SC2404-C-TX | |
| Q232 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q233 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q235 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q236 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q241 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q242 | 8-729-122-63 | TRANSISTOR 2SA1226 | |
| Q243 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q244 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q245 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q250 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q251 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q252 | 8-729-805-41 | TRANSISTOR 2SC3398-TB | |
| Q253 | 8-729-402-19 | TRANSISTOR 2SC2404-C-TX | |
| Q254 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q501 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q502 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q503 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q551 | 8-729-901-06 | TRANSISTOR DTA144EK | |
| Q552 | 8-729-903-30 | TRANSISTOR DTC144TK | |
| Q553 | 8-729-903-30 | TRANSISTOR DTC144TK | |
| Q602 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q603 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q604 | 8-729-902-XX | TRANSISTOR DTC114TK | |
| Q605 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q606 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q607 | 8-729-902-XX | TRANSISTOR DTC114TK | |
| Q608 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q609 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q610 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q611 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q612 | 8-729-216-22 | TRANSISTOR 2SA1162 | |

When indicating parts by reference number, please include the board name.

## CV-8

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| Q614 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q615 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q617 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q618 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q619 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q620 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q621 | 8-729-902-XX | TRANSISTOR DTC114TK | |
| Q622 | 8-729-902-XX | TRANSISTOR DTC114TK | |
| Q623 | 8-729-902-XX | TRANSISTOR DTC114TK | |
| Q624 | 8-729-902-XX | TRANSISTOR DTC114TK | |
| Q625 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q626 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q627 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q628 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q629 | 8-729-920-08 | TRANSISTOR DTC124TK | |
| Q630 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q631 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q632 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q633 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q634 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q635 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q638 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q639 | 8-729-902-XX | TRANSISTOR DTC114TK | |
| Q641 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q642 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q644 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q645 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q646 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q647 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q648 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q801 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q802 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q803 | 8-729-402-21 | TRANSISTOR XN6501-TX | |
| Q804 | 8-729-402-21 | TRANSISTOR XN6501-TX | |
| Q806 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q807 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q809 | 8-729-902-XX | TRANSISTOR DTC114TK | |
| Q810 | 8-729-902-XX | TRANSISTOR DTC114TK | |
| Q811 | 8-729-901-06 | TRANSISTOR DTA144EK | |
| Q812 | 8-729-901-06 | TRANSISTOR DTA144EK | |
| Q816 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q817 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q818 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q819 | 8-729-805-25 | TRANSISTOR 2SB1121 | |
| Q820 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q822 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q824 | 8-729-901-03 | TRANSISTOR DTC144WK | |
| Q825 | 8-729-901-03 | TRANSISTOR DTC144WK | |
| Q826 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q827 | 8-729-100-05 | TRANSISTOR 2SC1623 | |
| Q828 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q830 | 8-729-903-30 | TRANSISTOR DTC144TK | |

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| | | RESISTOR | | | | |
| R201 | 1-216-699-11 | METAL CHIP | 100K | 0.50% | 1/10W | |
| R205 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R206 | 1-216-089-00 | METAL GLAZE | 47K | 5% | 1/10W | |
| R207 | 1-216-061-00 | METAL GLAZE | 3.3K | 5% | 1/10W | |
| R208 | 1-216-047-00 | METAL GLAZE | 820 | 5% | 1/10W | |
| R209 | 1-216-079-00 | METAL GLAZE | 18K | 5% | 1/10W | |
| R210 | 1-216-067-00 | METAL GLAZE | 5.6K | 5% | 1/10W | |
| R211 | 1-216-304-11 | METAL GLAZE | 3.3 | 5% | 1/10W | |
| R212 | 1-216-015-00 | METAL GLAZE | 39 | 5% | 1/10W | |
| R213 | 1-216-015-00 | METAL GLAZE | 39 | 5% | 1/10W | |
| R214 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R215 | 1-216-022-00 | METAL GLAZE | 75 | 5% | 1/10W | |
| R216 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R218 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R219 | 1-216-053-00 | METAL GLAZE | 1.5K | 5% | 1/10W | |
| R220 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R226 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% | 1/10W | |
| R227 | 1-216-055-00 | METAL GLAZE | 1.8K | 5% | 1/10W | |
| R231 | 1-216-121-00 | METAL GLAZE | 1M | 5% | 1/10W | |
| R232 | 1-216-027-00 | METAL GLAZE | 120 | 5% | 1/10W | |
| R233 | 1-216-095-00 | METAL GLAZE | 82K | 5% | 1/10W | |
| R234 | 1-216-121-00 | METAL GLAZE | 1M | 5% | 1/10W | |
| R235 | 1-216-121-00 | METAL GLAZE | 1M | 5% | 1/10W | |
| R236 | 1-216-047-00 | METAL GLAZE | 820 | 5% | 1/10W | |
| R237 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% | 1/10W | |
| R238 | 1-216-051-00 | METAL GLAZE | 1.2K | 5% | 1/10W | |
| R240 | 1-216-117-00 | METAL GLAZE | 680K | 5% | 1/10W | |
| R241 | 1-216-093-00 | METAL GLAZE | 68K | 5% | 1/10W | |
| R242 | 1-216-666-11 | METAL CHIP | 4.3K | 0.50% | 1/10W | |
| R243 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R246 | 1-216-651-11 | METAL CHIP | 1K | 0.50% | 1/10W | |
| R247 | 1-216-643-11 | METAL CHIP | 470 | 0.50% | 1/10W | |
| R248 | 1-216-071-00 | METAL GLAZE | 8.2K | 5% | 1/10W | |
| R249 | 1-216-059-00 | METAL GLAZE | 2.7K | 5% | 1/10W | |
| R250 | 1-216-041-00 | METAL GLAZE | 470 | 5% | 1/10W | |
| R251 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R252 | 1-216-113-00 | METAL GLAZE | 470K | 5% | 1/10W | |
| R253 | 1-216-051-00 | METAL GLAZE | 1.2K | 5% | 1/10W | |
| R254 | 1-216-047-00 | METAL GLAZE | 820 | 5% | 1/10W | |
| R256 | 1-216-047-00 | METAL GLAZE | 820 | 5% | 1/10W | |
| R257 | 1-216-047-00 | METAL GLAZE | 820 | 5% | 1/10W | |
| R258 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R260 | 1-216-029-00 | METAL GLAZE | 150 | 5% | 1/10W | |
| R261 | 1-216-121-00 | METAL GLAZE | 1M | 5% | 1/10W | |
| R262 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R263 | 1-216-047-00 | METAL GLAZE | 820 | 5% | 1/10W | |
| R264 | 1-216-053-00 | METAL GLAZE | 1.5K | 5% | 1/10W | |
| R265 | 1-216-021-00 | METAL GLAZE | 68 | 5% | 1/10W | |
| R266 | 1-216-083-00 | METAL GLAZE | 27K | 5% | 1/10W | |
| R267 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R268 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |

When indicating parts by reference number, please include the board name.

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| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R269 | 1-216-043-00 | METAL GLAZE | 560 | 5% | 1/10W | |
| R270 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R271 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R272 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R273 | 1-216-083-00 | METAL GLAZE | 27K | 5% | 1/10W | |
| R274 | 1-216-063-00 | METAL GLAZE | 3.9K | 5% | 1/10W | |
| R283 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R284 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R286 | 1-216-053-00 | METAL GLAZE | 1.5K | 5% | 1/10W | |
| R287 | 1-216-053-00 | METAL GLAZE | 1.5K | 5% | 1/10W | |
| R288 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R289 | 1-216-055-00 | METAL GLAZE | 1.8K | 5% | 1/10W | |
| R290 | 1-216-041-00 | METAL GLAZE | 470 | 5% | 1/10W | |
| R291 | 1-216-021-00 | METAL GLAZE | 68 | 5% | 1/10W | |
| R292 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R293 | 1-216-079-00 | METAL GLAZE | 18K | 5% | 1/10W | |
| R294 | 1-216-079-00 | METAL GLAZE | 18K | 5% | 1/10W | |
| R295 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R296 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R297 | 1-216-053-00 | METAL GLAZE | 1.5K | 5% | 1/10W | |
| R298 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R300 | 1-216-085-00 | METAL GLAZE | 33K | 5% | 1/10W | |
| R301 | 1-216-043-00 | METAL GLAZE | 560 | 5% | 1/10W | |
| R302 | 1-216-037-00 | METAL GLAZE | 330 | 5% | 1/10W | |
| R303 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R304 | 1-216-053-00 | METAL GLAZE | 1.5K | 5% | 1/10W | |
| R305 | 1-216-027-00 | METAL GLAZE | 120 | 5% | 1/10W | |
| R306 | 1-216-045-00 | METAL GLAZE | 680 | 5% | 1/10W | |
| R307 | 1-216-033-00 | METAL GLAZE | 220 | 5% | 1/10W | |
| R309 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% | 1/10W | |
| R310 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R311 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R312 | 1-216-043-00 | METAL GLAZE | 560 | 5% | 1/10W | |
| R313 | 1-216-025-00 | METAL GLAZE | 100 | 5% | 1/10W | |
| R314 | 1-216-041-00 | METAL GLAZE | 470 | 5% | 1/10W | |
| R315 | 1-216-041-00 | METAL GLAZE | 470 | 5% | 1/10W | |
| R316 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R317 | 1-216-071-00 | METAL GLAZE | 8.2K | 5% | 1/10W | |
| R318 | 1-216-043-00 | METAL GLAZE | 560 | 5% | 1/10W | |
| R319 | 1-216-043-00 | METAL GLAZE | 560 | 5% | 1/10W | |
| R320 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R321 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R322 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% | 1/10W | |
| R323 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R324 | 1-216-025-00 | METAL GLAZE | 100 | 5% | 1/10W | |
| R332 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R333 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R334 | 1-216-053-00 | METAL GLAZE | 1.5K | 5% | 1/10W | |
| R335 | 1-216-055-00 | METAL GLAZE | 1.8K | 5% | 1/10W | |
| R336 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R337 | 1-216-061-00 | METAL GLAZE | 3.3K | 5% | 1/10W | |
| R348 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R353 | 1-216-089-00 | METAL GLAZE | 47K | 5% | 1/10W | |

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R355 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% | 1/10W | |
| R357 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R358 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R369 | 1-216-079-00 | METAL GLAZE | 18K | 5% | 1/10W | |
| R374 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R376 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R377 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R378 | 1-216-748-11 | METAL GLAZE | 39K | 5% | 1/10W | |
| R380 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R381 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R382 | 1-216-053-00 | METAL GLAZE | 1.5K | 5% | 1/10W | |
| R383 | 1-216-045-00 | METAL GLAZE | 680 | 5% | 1/10W | |
| R384 | 1-216-055-00 | METAL GLAZE | 1.8K | 5% | 1/10W | |
| R385 | 1-216-045-00 | METAL GLAZE | 680 | 5% | 1/10W | |
| R386 | 1-216-748-11 | METAL GLAZE | 39K | 5% | 1/10W | |
| R387 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% | 1/10W | |
| R389 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R391 | 1-216-089-00 | METAL GLAZE | 47K | 5% | 1/10W | |
| R392 | 1-216-089-00 | METAL GLAZE | 47K | 5% | 1/10W | |
| R393 | 1-216-089-00 | METAL GLAZE | 47K | 5% | 1/10W | |
| R394 | 1-216-113-00 | METAL GLAZE | 470K | 5% | 1/10W | |
| R395 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R396 | 1-216-033-00 | METAL GLAZE | 220 | 5% | 1/10W | |
| R399 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R401 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R402 | 1-216-075-00 | METAL GLAZE | 12K | 5% | 1/10W | |
| R403 | 1-216-061-00 | METAL GLAZE | 3.3K | 5% | 1/10W | |
| R404 | 1-216-067-00 | METAL GLAZE | 5.6K | 5% | 1/10W | |
| R405 | 1-216-059-00 | METAL GLAZE | 2.7K | 5% | 1/10W | |
| R406 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R407 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% | 1/10W | |
| R408 | 1-216-053-00 | METAL GLAZE | 1.5K | 5% | 1/10W | |
| R409 | 1-216-045-00 | METAL GLAZE | 680 | 5% | 1/10W | |
| R410 | 1-216-025-00 | METAL GLAZE | 100 | 5% | 1/10W | |
| R411 | 1-216-051-00 | METAL GLAZE | 1.2K | 5% | 1/10W | |
| R412 | 1-216-131-11 | METAL GLAZE | 2.7M | 5% | 1/10W | |
| R414 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% | 1/10W | |
| R415 | 1-216-121-00 | METAL GLAZE | 1M | 5% | 1/10W | |
| R501 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R502 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R503 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R504 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R505 | 1-216-089-00 | METAL GLAZE | 47K | 5% | 1/10W | |
| R506 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R507 | 1-216-089-00 | METAL GLAZE | 47K | 5% | 1/10W | |
| R508 | 1-216-075-00 | METAL GLAZE | 12K | 5% | 1/10W | |
| R509 | 1-216-063-00 | METAL GLAZE | 3.9K | 5% | 1/10W | |
| R510 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R511 | 1-216-091-00 | METAL GLAZE | 56K | 5% | 1/10W | |
| R512 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% | 1/10W | |
| R513 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R514 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% | 1/10W | |
| R515 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% | 1/10W | |

When indicating parts by reference number, please include the board name.

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| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R516 | 1-216-083-00 | METAL GLAZE | 27K | 5% | 1/10W | |
| R517 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R518 | 1-216-085-00 | METAL GLAZE | 33K | 5% | 1/10W | |
| R519 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R520 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R521 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R522 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R523 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R524 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R525 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R526 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R527 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R551 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R552 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R553 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R603 | 1-216-053-00 | METAL GLAZE | 1.5K | 5% | 1/10W | |
| R604 | 1-216-059-00 | METAL GLAZE | 2.7K | 5% | 1/10W | |
| R605 | 1-216-059-00 | METAL GLAZE | 2.7K | 5% | 1/10W | |
| R606 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R607 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R608 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R609 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R610 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R611 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R612 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R613 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R614 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R615 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R616 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R617 | 1-216-134-00 | METAL GLAZE | 2.2 | 5% | 1/8W | |
| R618 | 1-216-071-00 | METAL GLAZE | 8.2K | 5% | 1/10W | |
| R619 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R620 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R621 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R622 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R623 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R624 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R625 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R626 | 1-216-068-00 | METAL GLAZE | 6.2K | 5% | 1/10W | |
| R627 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% | 1/10W | |
| R628 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R629 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R630 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R631 | 1-216-031-00 | METAL GLAZE | 180 | 5% | 1/10W | |
| R632 | 1-216-077-00 | METAL GLAZE | 15K | 5% | 1/10W | |
| R633 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R634 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R635 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R636 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R637 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R638 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R639 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R640 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R641 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R642 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R643 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R644 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R645 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R646 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R647 | 1-216-055-00 | METAL GLAZE | 1.8K | 5% | 1/10W | |
| R648 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R649 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R650 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R651 | 1-216-103-00 | METAL GLAZE | 180K | 5% | 1/10W | |
| R652 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R653 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R656 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R657 | 1-216-748-11 | METAL GLAZE | 39K | 5% | 1/10W | |
| R658 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R659 | 1-216-033-00 | METAL GLAZE | 220 | 5% | 1/10W | |
| R660 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R662 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R674 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R675 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R677 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R681 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R682 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R685 | 1-216-079-00 | METAL GLAZE | 18K | 5% | 1/10W | |
| R686 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R687 | 1-216-041-00 | METAL GLAZE | 470 | 5% | 1/10W | |
| R688 | 1-216-055-00 | METAL GLAZE | 1.8K | 5% | 1/10W | |
| R690 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R696 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R697 | 1-216-055-00 | METAL GLAZE | 1.8K | 5% | 1/10W | |
| R698 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% | 1/10W | |
| R699 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R700 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R702 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R703 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R705 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R711 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R713 | 1-216-748-11 | METAL GLAZE | 39K | 5% | 1/10W | |
| R715 | 1-216-075-00 | METAL GLAZE | 12K | 5% | 1/10W | |
| R716 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R717 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R718 | 1-216-045-00 | METAL GLAZE | 680 | 5% | 1/10W | |
| R719 | 1-216-075-00 | METAL GLAZE | 12K | 5% | 1/10W | |
| R720 | 1-216-077-00 | METAL GLAZE | 15K | 5% | 1/10W | |
| R721 | 1-216-079-00 | METAL GLAZE | 18K | 5% | 1/10W | |
| R722 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R723 | 1-216-079-00 | METAL GLAZE | 18K | 5% | 1/10W | |
| R724 | 1-216-077-00 | METAL GLAZE | 15K | 5% | 1/10W | |
| R726 | 1-216-052-00 | METAL GLAZE | 1.3K | 5% | 1/10W | |
| R728 | 1-216-068-00 | METAL GLAZE | 6.2K | 5% | 1/10W | |
| R729 | 1-216-039-00 | METAL GLAZE | 390 | 5% | 1/10W | |
| R730 | 1-216-067-00 | METAL GLAZE | 5.6K | 5% | 1/10W | |

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R731 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R732 | 1-216-075-00 | METAL GLAZE | 12K | 5% | 1/10W | |
| R733 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R734 | 1-216-079-00 | METAL GLAZE | 18K | 5% | 1/10W | |
| R735 | 1-216-061-00 | METAL GLAZE | 3.3K | 5% | 1/10W | |
| R736 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% | 1/10W | |
| R737 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R738 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R739 | 1-216-071-00 | METAL GLAZE | 8.2K | 5% | 1/10W | |
| R740 | 1-216-091-00 | METAL GLAZE | 56K | 5% | 1/10W | |
| R741 | 1-216-093-00 | METAL GLAZE | 68K | 5% | 1/10W | |
| R742 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R744 | 1-216-089-00 | METAL GLAZE | 47K | 5% | 1/10W | |
| R745 | 1-216-748-11 | METAL GLAZE | 39K | 5% | 1/10W | |
| R746 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R747 | 1-216-085-00 | METAL GLAZE | 33K | 5% | 1/10W | |
| R749 | 1-216-121-00 | METAL GLAZE | 1M | 5% | 1/10W | |
| R750 | 1-216-103-00 | METAL GLAZE | 180K | 5% | 1/10W | |
| R751 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R752 | 1-216-047-00 | METAL GLAZE | 820 | 5% | 1/10W | |
| R753 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R754 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R756 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R757 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R758 | 1-216-047-00 | METAL GLAZE | 820 | 5% | 1/10W | |
| R759 | 1-216-072-00 | METAL GLAZE | 9.1K | 5% | 1/10W | |
| R760 | 1-216-051-00 | METAL GLAZE | 1.2K | 5% | 1/10W | |
| R761 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R762 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R763 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R764 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% | 1/10W | |
| R765 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% | 1/10W | |
| R767 | 1-216-051-00 | METAL GLAZE | 1.2K | 5% | 1/10W | |
| R768 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R770 | 1-216-085-00 | METAL GLAZE | 33K | 5% | 1/10W | |
| R771 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R772 | 1-216-071-00 | METAL GLAZE | 8.2K | 5% | 1/10W | |
| R773 | 1-216-091-00 | METAL GLAZE | 56K | 5% | 1/10W | |
| R774 | 1-216-089-00 | METAL GLAZE | 47K | 5% | 1/10W | |
| R776 | 1-216-061-00 | METAL GLAZE | 3.3K | 5% | 1/10W | |
| R777 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R780 | 1-216-089-00 | METAL GLAZE | 47K | 5% | 1/10W | |
| R781 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R782 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R783 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R785 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R786 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R787 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R788 | 1-216-059-00 | METAL GLAZE | 2.7K | 5% | 1/10W | |
| R789 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R790 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R791 | 1-216-059-00 | METAL GLAZE | 2.7K | 5% | 1/10W | |
| R792 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R793 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R801 | 1-216-061-00 | METAL GLAZE | 3.3K | 5% | 1/10W | |
| R802 | 1-218-158-11 | METAL GLAZE | 27K | 1% | 1/10W | |
| R803 | 1-216-324-11 | METAL GLAZE | 10K | 1% | 1/10W | |
| R804 | 1-216-324-11 | METAL GLAZE | 10K | 1% | 1/10W | |
| R805 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R806 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R807 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R808 | 1-216-043-00 | METAL GLAZE | 560 | 5% | 1/10W | |
| R809 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R810 | 1-216-043-00 | METAL GLAZE | 560 | 5% | 1/10W | |
| R811 | 1-216-051-00 | METAL GLAZE | 1.2K | 5% | 1/10W | |
| R812 | 1-216-033-00 | METAL GLAZE | 220 | 5% | 1/10W | |
| R813 | 1-216-134-00 | METAL GLAZE | 2.2 | 5% | 1/8W | |
| R814 | 1-216-061-00 | METAL GLAZE | 3.3K | 5% | 1/10W | |
| R815 | 1-216-017-00 | METAL GLAZE | 47 | 5% | 1/10W | |
| R816 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R817 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | |
| R818 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R819 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R820 | 1-216-045-00 | METAL GLAZE | 680 | 5% | 1/10W | |
| R821 | 1-216-095-00 | METAL GLAZE | 82K | 5% | 1/10W | |
| R822 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R823 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R824 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R825 | 1-216-093-00 | METAL GLAZE | 68K | 5% | 1/10W | |
| R826 | 1-216-748-11 | METAL GLAZE | 39K | 5% | 1/10W | |
| R827 | 1-216-113-00 | METAL GLAZE | 470K | 5% | 1/10W | |
| R828 | 1-216-065-00 | METAL GLAZE | 4.7K | 5% | 1/10W | |
| R829 | 1-216-121-00 | METAL GLAZE | 1M | 5% | 1/10W | |
| R831 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R832 | 1-216-049-00 | METAL GLAZE | 1K | 5% | 1/10W | |
| R833 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R836 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W | |
| R837 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R838 | 1-216-097-00 | METAL GLAZE | 100K | 5% | 1/10W | |
| R839 | 1-216-043-00 | METAL GLAZE | 560 | 5% | 1/10W | |
| R840 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R841 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R842 | 1-216-134-00 | METAL GLAZE | 2.2 | 5% | 1/8W | |
| R843 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R844 | 1-216-057-00 | METAL GLAZE | 2.2K | 5% | 1/10W | |
| R845 | 1-216-063-00 | METAL GLAZE | 3.9K | 5% | 1/10W | |
| R846 | 1-216-033-00 | METAL GLAZE | 220 | 5% | 1/10W | |
| R847 | 1-216-033-00 | METAL GLAZE | 220 | 5% | 1/10W | |
| R848 | 1-216-033-00 | METAL GLAZE | 220 | 5% | 1/10W | |
| R849 | 1-216-144-00 | METAL GLAZE | 5.6 | 5% | 1/8W | |
| R850 | 1-216-134-00 | METAL GLAZE | 2.2 | 5% | 1/8W | |
| R855 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | |
| R857 | 1-216-069-00 | METAL GLAZE | 6.8K | 5% | 1/10W | |
| R858 | 1-216-067-00 | METAL GLAZE | 5.6K | 5% | 1/10W | |
| R859 | 1-216-067-00 | METAL GLAZE | 5.6K | 5% | 1/10W | |
| R860 | 1-216-748-11 | METAL GLAZE | 39K | 5% | 1/10W | |

When indicating parts by reference number, please include the board name.

# CV-8 PS-180

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| R861 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R862 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R863 | 1-216-091-00 | METAL GLAZE 56K 5% 1/10W | |
| R864 | 1-216-083-00 | METAL GLAZE 27K 5% 1/10W | |
| R865 | 1-216-091-00 | METAL GLAZE 56K 5% 1/10W | |
| R866 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R867 | 1-216-105-00 | METAL GLAZE 220K 5% 1/10W | |
| R868 | 1-216-071-00 | METAL GLAZE 8.2K 5% 1/10W | |
| R869 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R870 | 1-216-081-00 | METAL GLAZE 22K 5% 1/10W | |
| R871 | 1-216-295-00 | METAL GLAZE 0 5% 1/10W | |
| R872 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R873 | 1-216-025-00 | METAL GLAZE 100 5% 1/10W | |
| R874 | 1-216-093-00 | METAL GLAZE 68K 5% 1/10W | |
| R875 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R876 | 1-216-101-00 | METAL GLAZE 150K 5% 1/10W | |
| R877 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W | |
| R878 | 1-216-748-11 | METAL GLAZE 39K 5% 1/10W | |
| R879 | 1-216-121-00 | METAL GLAZE 1M 5% 1/10W | |
| R880 | 1-216-025-00 | METAL GLAZE 100 5% 1/10W | |
| R881 | 1-216-748-11 | METAL GLAZE 39K 5% 1/10W | |
| R882 | 1-216-077-00 | METAL GLAZE 15K 5% 1/10W | |
| R883 | 1-216-053-00 | METAL GLAZE 1.5K 5% 1/10W | |
| R884 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R885 | 1-216-099-00 | METAL GLAZE 120K 5% 1/10W | |
| R886 | 1-216-121-00 | METAL GLAZE 1M 5% 1/10W | |
| R887 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R888 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R889 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R890 | 1-216-144-00 | METAL GLAZE 5.6 5% 1/8W | |
| R891 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R892 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R893 | 1-216-121-00 | METAL GLAZE 1M 5% 1/10W | |
| R894 | 1-216-748-11 | METAL GLAZE 39K 5% 1/10W | |
| R895 | 1-216-077-00 | METAL GLAZE 15K 5% 1/10W | |
| R896 | 1-216-059-00 | METAL GLAZE 2.7K 5% 1/10W | |
| R897 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R898 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R899 | 1-216-067-00 | METAL GLAZE 5.6K 5% 1/10W | |

VARIABLE RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| RV201 | 1-230-873-11 | RES, ADJ, METAL GLAZE 47K | |
| RV202 | 1-230-870-11 | RES, ADJ, METAL GRAZE 10K | |
| RV203 | 1-230-873-11 | RES, ADJ, METAL GLAZE 47K | |
| RV204 | 1-230-868-11 | RES, ADJ, METAL GLAZE 2.2K | |
| RV205 | 1-230-869-11 | RES, ADJ, METAL GLAZE 4.7K | |
| RV206 | 1-230-867-11 | RES, ADJ, METAL GLAZE 1K | |
| RV207 | 1-230-868-11 | RES, ADJ, METAL GLAZE 2.2K | |
| RV208 | 1-230-866-11 | RES, ADJ, METAL GLAZE 470 | |
| RV209 | 1-230-867-11 | RES, ADJ, METAL GLAZE 1K | |
| RV552 | 1-230-874-11 | RES, ADJ, METAL GLAZE 100K | |
| RV801 | 1-230-875-21 | RES, ADJ, METAL GLAZE 220K | |

CRYSTAL

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| X201 | 1-577-080-11 | VIBRATOR, CRYSTAL (3.58MHz) | |
| X601 | 1-577-118-11 | VIBRATOR, LITHIUM NIOBATE (4MHz) | |
| X603 | 1-567-898-11 | OSCILLATOR, CRYSTAL (28MHz) | |

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*A-7061-382-A PS-180 BOARD, COMPLETE(Ref. No. 4000 series)
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CAPACITOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| C936 | 1-124-438-00 | ELECT 1MF 20% 50V | |
| C937 | 1-124-438-00 | ELECT 1MF 20% 50V | |
| C938 | 1-163-809-11 | CERAMIC CHIP 0.047MF 10% 25V | |
| C939 | 1-124-438-00 | ELECT 1MF 20% 50V | |
| C940 | 1-164-161-11 | CERAMIC CHIP 0.0022MF 50V | |
| C941 | 1-127-489-00 | ELECT(SOLID) 10MF 20% 10V | |
| C942 | 1-163-125-00 | CERAMIC CHIP 220PF 10% 50V | |
| C943 | 1-163-009-11 | CERAMIC CHIP 0.001MF 10% 50V | |
| C944 | 1-127-561-11 | ELECT(SOLID) 33MF 20% 10V | |
| C945 | 1-162-637-11 | CERAMIC CHIP 0.47MF 16V | |
| C955 | 1-127-489-00 | ELECT(SOLID) 10MF 20% 10V | |
| C957 | 1-124-589-11 | ELECT 47MF 20% 10V | |
| C958 | 1-124-589-11 | ELECT 47MF 20% 10V | |
| C959 | 1-124-589-11 | ELECT 47MF 20% 10V | |
| C961 | 1-164-161-11 | CERAMIC CHIP 0.0022MF 10% 50V | |
| C962 | 1-163-033-00 | CERAMIC CHIP 0.022MF 50V | |
| C963 | 1-163-125-00 | CERAMIC CHIP 220PF 10% 50V | |
| C964 | 1-124-234-00 | ELECT 22MF 20% 16V | |
| C965 | 1-124-261-00 | ELECT 10MF 20% 50V | |
| C966 | 1-124-261-00 | ELECT 10MF 20% 50V | |
| C967 | 1-127-509-00 | ELECT(SOLID) 3.3MF 20% 25V | |
| C968 | 1-124-598-11 | ELECT 22MF 20% 25V | |
| C978 | 1-163-125-00 | CERAMIC CHIP 220PF 5% 50V | |
| C984 | 1-124-570-11 | ELECT 220MF 20% 16V | |
| C985 | 1-163-019-00 | CERAMIC CHIP 0.0068MF 10% 50V | |
| C988 | 1-164-161-11 | CERAMIC CHIP 0.0022MF 50V | |
| C989 | 1-164-161-11 | CERAMIC CHIP 0.0022MF 50V | |
| C990 | 1-164-161-11 | CERAMIC CHIP 0.0022MF 50V | |
| C991 | 1-163-809-11 | CERAMIC CHIP 0.047MF 10% 25V | |

CONNECTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| CN901 | *1-506-481-11 | PIN, CONNECTOR 2P | |

DIODE

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| D935 | ⚠8-719-106-71 | DIODE RD12M-B2 | |
| D936 | 8-719-101-23 | DIODE 1SS123 | |
| D937 | 8-719-101-23 | DIODE 1SS123 | |
| D938 | 8-719-510-15 | DIODE D1FS4-TB | |
| D939 | 8-719-118-29 | DIODE 1SS220 | |
| D940 | 8-719-118-29 | DIODE 1SS220 | |
| D941 | 8-719-118-29 | DIODE 1SS220 | |
| D942 | 8-719-118-29 | DIODE 1SS220 | |

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| D943 | 8-719-118-29 | DIODE 1SS220 | |

### FUSE

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| F901 | ⚠1-532-778-21 | FUSE, MICRO (SECONDARY) (125V 1.6A) | |
| F902 | ⚠1-532-593-00 | FUSE, GLASS TUBE (125V 1.6A) | |
| F903 | ⚠1-532-778-21 | FUSE, MICRO (SECONDARY) (125V 1.6A) | |

### IC

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| IC935 | 8-759-937-36 | IC TL1451ACNS | |

### JACK

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| J901 | 1-535-658-51 | TERMINAL BOARD | |

### COIL

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| L935 | 1-410-690-11 | COIL, CHOKE 22UH | |
| L937 | 1-421-918-11 | COIL, CHOKE 10UH | |
| L938 | 1-410-626-11 | COIL, CHOKE 47UH | |
| L939 | 1-410-626-11 | COIL, CHOKE 47UH | |
| L940 | 1-408-978-21 | INDUCTOR 47UH | |
| L942 | 1-410-626-11 | COIL, CHOKE 47UH | |
| L944 | 1-410-385-11 | INDUCTOR CHIP 22UH | |
| L946 | 1-421-918-11 | COIL, CHOKE 10UH | |
| L951 | 1-410-658-11 | INDUCTOR CHIP 220UH | |
| L952 | 1-412-026-11 | INDUCTOR CHIP 1UH | |
| L953 | 1-412-026-11 | INDUCTOR CHIP 1UH | |
| L954 | 1-412-026-11 | INDUCTOR CHIP 1UH | |
| L955 | 1-412-026-11 | INDUCTOR CHIP 1UH | |
| L956 | 1-412-026-11 | INDUCTOR CHIP 1UH | |
| L957 | 1-412-026-11 | INDUCTOR CHIP 1UH | |

### TRANSISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| Q935 | 8-729-805-43 | TRANSISTOR 2SC3396 | |
| Q936 | 8-729-805-67 | TRANSISTOR 2SA1342 | |
| 0937 | 8-729-805-67 | TRANSISTOR 2SA1342 | |
| Q938 | 8-729-805-43 | TRANSISTOR 2SC3396 | |
| Q939 | 8-729-805-67 | TRANSISTOR 2SA1342 | |
| Q940 | 8-729-162-13 | TRANSISTOR 2SC1621 | |
| Q941 | ⚠8-729-105-29 | TRANSISTOR 2SB1203-S | |
| Q942 | 8-729-805-25 | TRANSISTOR 2SB1121 | |
| Q943 | 8-729-805-67 | TRANSISTOR 2SA1342 | |
| Q944 | 8-729-805-43 | TRANSISTOR 2SC3396 | |
| Q945 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q946 | 8-729-100-76 | TRANSISTOR 2SA812 | |
| Q947 | ⚠8-729-140-55 | TRANSISTOR 2SK739 | |
| Q952 | 8-729-901-04 | TRANSISTOR DTA114EK | |
| Q953 | 8-729-805-45 | TRANSISTOR 2SC3395 | |

### RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| R935 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W | |
| R936 | 1-216-071-00 | METAL GLAZE 8.2K 5% 1/10W | |
| R937 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R938 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W | |
| R939 | 1-216-099-00 | METAL GLAZE 120K 5% 1/10W | |
| R940 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R941 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W | |
| R942 | 1-216-748-11 | METAL GLAZE 39K 5% 1/10W | |
| R943 | 1-216-033-00 | METAL GLAZE 220 5% 1/10W | |
| R944 | 1-216-051-00 | METAL GLAZE 1.2K 5% 1/10W | |
| R945 | 1-216-027-00 | METAL GLAZE 120 5% 1/10W | |
| R946 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R947 | 1-216-059-00 | METAL GLAZE 2.7K 5% 1/10W | |
| R948 | 1-216-081-00 | METAL GLAZE 22K 5% 1/10W | |
| R949 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R950 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R951 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W | |
| R953 | 1-216-099-00 | METAL GLAZE 120K 5% 1/10W | |
| R954 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W | |
| R955 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W | |
| R956 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R957 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R958 | 1-216-035-00 | METAL GLAZE 270 5% 1/10W | |
| R959 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R960 | 1-216-001-00 | METAL GLAZE 10 5% 1/10W | |
| R961 | 1-216-085-00 | METAL GLAZE 33K 5% 1/10W | |
| R962 | 1-216-059-00 | METAL GLAZE 2.7K 5% 1/10W | |
| R975 | 1-216-063-00 | METAL GLAZE 3.9K 5% 1/10W | |
| R978 | 1-216-089-00 | METAL GLAZE 47K 5% 1/10W | |
| R985 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R986 | 1-216-081-00 | METAL GLAZE 22K 5% 1/10W | |
| R987 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R990 | 1-216-121-00 | METAL GLAZE 1M 5% 1/10W | |

### VARIABLE RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| RV936 | 1-230-867-11 | RES, ADJ, METAL GLAZE 1K | |
| RV937 | 1-230-866-11 | RES, ADJ, METAL GLAZE 470 | |
| RV938 | 1-230-869-11 | RES, ADJ, METAL GLAZE 4.7K | |

### TRANSFORMER

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| T936 | 1-449-454-11 | TRANSFORMER, CONVERTER | |

### CONNECTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| W901 | 1-564-610-11 | CONNECTOR, BOARD TO BOARD | |
| W902 | 1-564-610-11 | CONNECTOR, BOARD TO BOARD | |

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*A-7061-556-A CK-8 BOARD, COMPLETE(Ref. No.
********************** 4000 series)

### CAPACITOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| C651 | 1-163-093-00 | CERAMIC CHIP 10PF 5% 50V | |
| C652 | 1-163-038-00 | CERAMIC CHIP 0.1MF 25V | |
| C653 | 1-163-038-00 | CERAMIC CHIP 0.1MF 25V | |
| C654 | 1-163-105-00 | CERAMIC CHIP 33PF 5% 50V | |
| C655 | 1-124-257-00 | ELECT 2.2MF 20% 50V | |
| C656 | 1-124-257-00 | ELECT 2.2MF 20% 50V | |

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifé.

When indicating parts by reference number, please include the board name.

## CK-8

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| C657 | 1-126-157-11 | ELECT 10MF 20% | 16V |
| C658 | 1-163-038-00 | CERAMIC CHIP 0.1MF | 25V |
| C659 | 1-162-638-11 | CERAMIC CHIP 1MF | 16V |
| C660 | 1-163-021-00 | CERAMIC CHIP 0.01MF 10% | 50V |

### TRIMMER

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| CV651 | 1-141-331-11 | CAP, VAR, TRIMMER (CHIP) (30PF) | |

### DIODE

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| D651 | 8-719-938-72 | DIODE SB01-05CP | |
| D652 | 8-719-100-05 | DIODE 1S2837 | |
| D653 | 8-719-100-05 | DIODE 1S2837 | |
| D654 | 8-719-100-05 | DIODE 1S2837 | |
| D657 | 8-719-100-05 | DIODE 1S2837 | |
| D658 | 8-719-100-05 | DIODE 1S2837 | |

### IC

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| IC651 | 8-759-143-37 | IC UPD7508BGB-505 | |

### COIL

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| L651 | 1-410-391-11 | INDUCTOR CHIP 68UH | |

### TRANSISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| Q651 | 8-729-901-03 | TRANSISTOR DTC144WK | |
| Q652 | 8-729-216-22 | TRANSISTOR 2SA1162G | |
| Q653 | 8-729-901-03 | TRANSISTOR DTC144WK | |
| Q654 | 8-729-220-93 | TRANSISTOR 2SK209G | |
| Q655 | 8-729-216-22 | TRANSISTOR 2SA1162G | |
| Q656 | 8-729-216-22 | TRANSISTOR 2SA1162G | |
| Q657 | 8-729-216-22 | TRANSISTOR 2SA1162G | |
| Q658 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q659 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q660 | 8-729-216-22 | TRANSISTOR 2SA1162G | |
| Q661 | 8-729-216-22 | TRANSISTOR 2SA1162G | |
| Q662 | 8-729-902-XX | TRANSISTOR DTC114TK | |
| Q663 | 8-729-902-XX | TRANSISTOR DTC114TK | |
| Q664 | 8-729-216-22 | TRANSISTOR 2SA1162G | |

### RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| R651 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R652 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R653 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R654 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R655 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R656 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R657 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R658 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R659 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R660 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R661 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R662 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R663 | 1-216-089-00 | METAL GLAZE 47K 5% 1/10W | |
| R664 | 1-216-093-00 | METAL GLAZE 68K 5% 1/10W | |
| R665 | 1-216-085-00 | METAL GLAZE 33K 5% 1/10W | |
| R666 | 1-216-025-00 | METAL GLAZE 100 5% 1/10W | |
| R667 | 1-216-129-00 | METAL GLAZE 2.2M 5% 1/10W | |
| R668 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R669 | 1-216-105-00 | METAL GLAZE 220K 5% 1/10W | |
| R670 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R671 | 1-216-109-00 | METAL GLAZE 330K 5% 1/10W | |
| R672 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R673 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R674 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R675 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R676 | 1-216-103-00 | METAL GLAZE 180K 5% 1/10W | |
| R677 | 1-216-121-00 | METAL GLAZE 1M 5% 1/10W | |
| R678 | 1-218-167-11 | METAL GLAZE 330K 1% 1/10W | |
| R679 | 1-216-121-00 | METAL GLAZE 1M 5% 1/10W | |
| R680 | 1-218-167-11 | METAL GLAZE 330K 1% 1/10W | |
| R681 | 1-216-336-11 | METAL GLAZE 47K 1% 1/10W | |
| R682 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R683 | 1-216-109-00 | METAL GLAZE 330K 5% 1/10W | |
| R684 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R685 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R686 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R687 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R688 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R689 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R690 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R691 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R692 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R693 | 1-216-049-00 | METAL GLAZE 1K 5% 1/10W | |
| R694 | 1-216-025-00 | METAL GLAZE 100 5% 1/10W | |
| R696 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |

### VARIABLE RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| RV651 | 1-230-874-11 | RES, ADJ, METAL GLAZE 100K | |

### SWITCH

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| S651 | 1-553-977-00 | SWITCH, SLIDE (AUTO LOCK) | |
| S652 | 1-570-909-21 | SWITCH, TACTIL (REFLOW TYPE) (SHUTTER SPEED) | |
| S653 | 1-570-909-21 | SWITCH, TACTIL (REFLOW TYPE) (BACK LIGHT) | |
| S654 | 1-570-909-21 | SWITCH, TACTIL (REFLOW TYPE) (WHITE BAL) | |
| S655 | 1-570-909-21 | SWITCH, TACTIL (REFLOW TYPE) (FOCUS) | |
| S659 | 1-570-909-21 | SWITCH, TACTIL (REFLOW TYPE) (DATE) | |
| S660 | 1-570-909-21 | SWITCH, TACTIL (REFLOW TYPE) (TIME) | |

### CRYSTAL

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| X651 | 1-527-997-21 | VIBRATOR, CRYSTAL (32.768KHz) | |

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When indicating parts by reference number, please include the board name.

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| | *1-629-379-13 | DK-2 BOARD(Ref. No. 5000 series)<br>*********** | |
| | | DIODE | |
| D691 | 8-719-801-48 | DIODE 1SS193 | |
| D692 | 8-719-100-05 | DIODE 1S2837 | |
| | | SWITCH | |
| S691 | 1-570-909-21 | SWITCH, TACTIL (REFLOW TYPE)<br>(EDIT SERCH +) | |
| S692 | 1-570-909-21 | SWITCH, TACTIL (REFLOW TYPE)<br>(EDIT SERCH -) | |
| S693 | 1-570-909-21 | SWITCH, TACTIL (REFLOW TYPE)<br>(COUNTER RESET) | |
| S694 | 1-570-909-21 | SWITCH, TACTIL (REFLOW TYPE)<br>(ZERO MEMORY) | |
| | | FLAT CABLE | |
| W652 | 1-574-453-11 | CABLE, FLAT (1.0MM PITCH) 6P | |

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| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| | *A-7061-560-A | VF-14 BOARD, COMPLETE(Ref. No. 6000 series)<br>********************** | |
| | *3-674-372-00 | HOLDER (A), LED | |
| | | CAPACITOR | |
| C901 | 1-124-442-00 | ELECT 330MF 20% 6.3V | |
| C903 | 1-163-077-00 | CERAMIC CHIP 0.1MF 50V | |
| C904 | 1-126-160-11 | ELECT 1MF 20% 50V | |
| C905 | 1-163-037-11 | CERAMIC CHIP 0.022MF 10% 25V | |
| C906 | 1-131-381-00 | TANTALUM 47MF 10% 6.3V | |
| C907 | 1-162-638-11 | CERAMIC CHIP 1MF 16V | |
| C908 | 1-136-165-00 | FILM 0.1MF 5% 50V | |
| C909 | 1-163-105-00 | CERAMIC CHIP 33PF 5% 50V | |
| C910 | 1-124-587-11 | ELECT 220MF 20% 6.3V | |
| C911 | 1-163-141-00 | CERAMIC CHIP 0.001MF 5% 50V | |
| C912 | ⚠1-162-625-11 | CERAMIC CHIP 0.0047MF 5% 50V | |
| C913 | ⚠1-162-625-11 | CERAMIC CHIP 0.0047MF 5% 50V | |
| C914 | ⚠1-163-209-00 | CERAMIC CHIP 0.0015MF 5% 50V | |
| C915 | 1-126-090-11 | ELECT 82MF 20% 10V | |
| C916 | 1-126-160-11 | ELECT 1MF 20% 50V | |
| C918 | 1-163-037-11 | CERAMIC CHIP 0.022MF 10% 25V | |
| C919 | 1-102-038-00 | CERAMIC 0.001MF 500V | |
| | | CONNECTOR | |
| CN902 | *1-566-195-11 | PIN, CONNECTOR (PC BOARD) 2P | |
| CN903 | *1-566-195-21 | PIN, CONNECTOR (PC BOARD) 2P | |
| CN904 | *1-566-759-11 | PIN, CONNECTOR (PC BOARD) 4P | |
| | | DIODE | |
| D903 | 8-719-400-20 | DIODE MA152WA | |

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| | | IC | |
| IC901 | 8-759-420-01 | IC AN2512S | |
| | | COIL | |
| L901 | 1-410-831-21 | INDUCTOR 82UH | |
| L902 | 1-408-976-21 | INDUCTOR 33UH | |
| L903 | ⚠1-459-858-11 | COIL, FERRITE (HLC) | |
| | | TRANSISTOR | |
| Q902 | ⚠8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q903 | 8-729-216-32 | TRANSISTOR 2SA1163G | |
| Q904 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q905 | ⚠8-729-106-68 | TRANSISTOR 2SD1615A-GP | |
| | | RESISTOR | |
| R901 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R903 | 1-216-041-00 | METAL GLAZE 470 5% 1/10W | |
| R904 | 1-216-051-00 | METAL GLAZE 1.2K 5% 1/10W | |
| R905 | 1-216-007-00 | METAL GLAZE 18 5% 1/10W | |
| R906 | 1-216-121-00 | METAL GLAZE 1M 5% 1/10W | |
| R908 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R909 | 1-216-113-00 | METAL GLAZE 470K 5% 1/10W | |
| R910 | 1-216-053-00 | METAL GLAZE 1.5K 5% 1/10W | |
| R911 | 1-216-013-00 | METAL GLAZE 33 5% 1/10W | |
| R912 | 1-216-691-11 | METAL CHIP 47K 0.50% 1/10W | |
| R913 | 1-218-163-11 | METAL GLAZE 120K 1% 1/10W | |
| R914 | 1-216-025-00 | METAL GLAZE 100 5% 1/10W | |
| R915 | 1-216-306-11 | METAL GLAZE 3.9 5% 1/10W | |
| R917 | 1-216-047-00 | METAL GLAZE 820 5% 1/10W | |
| R918 | 1-216-069-00 | METAL GLAZE 6.8K 5% 1/10W | |
| R919 | 1-216-748-11 | METAL GLAZE 39K 5% 1/10W | |
| R920 | 1-216-748-11 | METAL GLAZE 39K 5% 1/10W | |
| R921 | 1-216-053-00 | METAL GLAZE 1.5K 5% 1/10W | |
| R922 | 1-216-101-00 | METAL GLAZE 150K 5% 1/10W | |
| R923 | 1-216-121-00 | METAL GLAZE 1M 5% 1/10W | |
| R924 | 1-216-131-11 | METAL GLAZE 2.7M 5% 1/10W | |
| R925 | 1-216-131-11 | METAL GLAZE 2.7M 5% 1/10W | |
| R926 | 1-216-055-00 | METAL GLAZE 1.8K 5% 1/10W | |
| R927 | 1-216-061-00 | METAL GLAZE 3.3K 5% 1/10W | |
| R928 | 1-216-051-00 | METAL GLAZE 1.2K 5% 1/10W | |
| R929 | 1-216-047-00 | METAL GLAZE 820 5% 1/10W | |
| R930 | 1-216-041-00 | METAL GLAZE 470 5% 1/10W | |
| R931 | 1-216-041-00 | METAL GLAZE 470 5% 1/10W | |
| R932 | 1-216-047-00 | METAL GLAZE 820 5% 1/10W | |
| R933 | 1-216-121-00 | METAL GLAZE 1M 5% 1/10W | |
| | | VARIABLE RESISTOR | |
| RV901 | 1-230-873-11 | RES, ADJ, METAL GLAZE 47K | |
| RV902 | 1-230-866-11 | RES, ADJ, METAL GLAZE 470 | |
| RV904 | 1-228-762-00 | RES, ADJ, METAL GLAZE 1M | |

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifé.

When indicating parts by reference number, please include the board name.

# VF-14 | LD-13 | MA-31 | RC-26 | KS-3

TRANSFORMER

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| T901 | ⚠1-439-431-11 | TRANSFORMER ASSY, FLYBACK | |

THERMISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| TH901 | 1-807-938-11 | THERMISTOR | |

SOCKET

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| W901 | 1-540-019-21 | SOCKET ASSY, CRT | |

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### *1-629-384-13 LD-13 BOARD(Ref. No. 7000 series)

DIODE

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| D901 | 8-719-941-34 | DIODE GL1HD51 | |
| D902 | 8-719-812-41 | DIODE GL3PR8 | |

HARNES

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| W905 | 1-948-188-11 | HARNES (LD-20) | |

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### *A-7061-594-A MA-31 BOARD, COMPLETE(Ref. No. 8000 series)

CAPACITOR

| Ref.No | Part No. | Description | | | |
|---|---|---|---|---|---|
| C451 | 1-126-154-11 | ELECT | 47MF | 20% | 6.3V |
| C452 | 1-163-081-00 | CERAMIC CHIP | 0.22MF | | 25V |
| C453 | 1-163-809-11 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C455 | 1-163-141-00 | CERAMIC CHIP | 0.001MF | 5% | 50V |
| C456 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |
| C457 | 1-163-081-00 | CERAMIC CHIP | 0.22MF | | 25V |
| C458 | 1-163-009-11 | CERAMIC CHIP | 0.001MF | 10% | 50V |
| C459 | 1-163-009-11 | CERAMIC CHIP | 0.001MF | 10% | 50V |
| C460 | 1-163-009-11 | CERAMIC CHIP | 0.001MF | 10% | 50V |
| C464 | 1-163-077-00 | CERAMIC CHIP | 0.1MF | | 50V |
| C465 | 1-163-809-11 | CERAMIC CHIP | 0.047MF | 10% | 25V |
| C466 | 1-126-154-11 | ELECT | 47MF | 20% | 6.3V |
| C470 | 1-163-989-11 | CERAMIC CHIP | 0.033MF | 10% | 25V |
| C471 | 1-163-038-00 | CERAMIC CHIP | 0.1MF | | 25V |

CONNECTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| CN451 | 1-565-877-11 | PIN, CONNECTOR (PC BOARD) 5P | |
| CN452 | *1-566-182-11 | PIN, CONNECTOR (PC BOARD) 3P | |

IC

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| IC451 | 8-759-820-51 | IC LA7293M | |

JACK

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| J451 | 1-507-921-00 | JACK (MIC) | |
| J452 | 1-563-454-11 | JACK, MINIATURE (DC OUT) | |

TRANSISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| Q451 | 8-729-100-66 | TRANSISTOR 2SC1623 | |

RESISTOR

| Ref.No | Part No. | Description | | | |
|---|---|---|---|---|---|
| R451 | 1-216-051-00 | METAL GLAZE | 1.2K | 5% | 1/10W |
| R452 | 1-216-748-11 | METAL GLAZE | 39K | 5% | 1/10W |
| R453 | 1-216-089-00 | METAL GLAZE | 47K | 5% | 1/10W |
| R454 | 1-216-055-00 | METAL GLAZE | 1.8K | 5% | 1/10W |
| R455 | 1-216-073-00 | METAL GLAZE | 10K | 5% | 1/10W |
| R456 | 1-216-069-00 | METAL GLAZE | 6.8K | 5% | 1/10W |
| R457 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W |
| R459 | 1-216-001-00 | METAL GLAZE | 10 | 5% | 1/10W |
| R460 | 1-216-043-00 | METAL GLAZE | 560 | 5% | 1/10W |

SWITCH

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| S451 | 1-570-910-21 | SWITCH, TACTIL (REFLOW TYPE) (REC START/STOP) | |

* * *

### *1-629-381-13 RC-26 BOARD(Ref. No. 9000 series)

CONNECTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| CN401 | 1-566-760-11 | PIN, CONNECTOR (PC BOARD) 5P | |
| CN951 | 1-566-192-11 | PIN, CONNECTOR (PC BOARD) 13P | |
| CN952 | *1-566-182-11 | PIN, CONNECTOR (PC BOARD) 3P | |

JACK

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| J951 | 1-565-276-11 | JACK, ULTRA SMALL 1P (REMOTE) | |
| J952 | 1-507-921-00 | JACK ( 🎧 ) | |

COIL

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| L951 | 1-410-369-11 | INDUCTOR CHIP 1UH | |
| L952 | 1-410-369-11 | INDUCTOR CHIP 1UH | |
| L953 | 1-410-369-11 | INDUCTOR CHIP 1UH | |
| L954 | 1-410-369-11 | INDUCTOR CHIP 1UH | |

SWITCH

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| S951 | 1-553-977-00 | SWITCH, SLIDE (STANDBY) | |
| S952 | 1-571-838-11 | SWITCH, TACTIL (START/STOP) | |

HARNES

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| W951 | 1-943-612-11 | HARNES (HK-1) | |

* * *

### *1-629-377-13 KS-3 BOARD(Ref. No. 7000 series)

CONNECOTR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| CN501 | *1-562-880-21 | CONNECOTR, CARD EDGE 15P | |

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

### FLAT CABLE

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| W502 | 1-574-456-11 | CABLE, FLAT (1.0MM PITCH) 15P | |

*****************************************************************

*1-629-372-11 LI-5 BOARD(Ref. No. 3000 series)
***********

### RESISTOR

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| R938 | 1-216-295-00 | METAL GLAZE 0 5% 1/10W | |
| R939 | 1-216-295-00 | METAL GLAZE 0 5% 1/10W | |
| R940 | 1-216-081-00 | METAL GLAZE 22K 5% 1/10W | |
| R941 | 1-216-057-00 | METAL GLAZE 2.2K 5% 1/10W | |

### FLAT CABLE

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| W802 | 1-574-457-11 | CABLE, FLAT (1.0MM PITCH) 23P | |

*****************************************************************

### MISCELLANEOUS
*************

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| | ⚠.1-451-310-21 | DEFLECTION YOKE (B/W) | |
| | 1-542-101-11 | MICROPHONE (C-2020) | |
| | 1-808-505-11 | SENSOR (DEW) | |
| IC601 | A-7090-878-A | IC ICX026AK-2 (CCD IMAGER) | |
| M902 | 8-835-331-01 | MOTOR, DC U-22A (CAPSTAN) | |
| M903 | A-7040-160-A | MOTOR ASSY, THREADING | |
| M904 | 3-707-561-01 | MOTOR ASSY, AF GEAR (FOCUS) | |
| M905 | 3-707-562-01 | MOTOR ASSY, PZ GEAR (ZOOM) | |
| M906 | 3-707-560-01 | METER ASSY, EE (IRIS) | |
| S901 | 1-571-837-11 | SWITCH, PUSH (ZOOM) | |
| S902 | 3-707-566-01 | SW ASSY, (F) LIMIT (FOCUS) | |
| S903 | 1-571-099-11 | SWITCH (CASSETTE DOWN) | |
| V901 | ⚠.1-452-482-11 | CRT ASSY (M01JYZ60WB) | |

*****************************************************************

### ACCESSORIES AND PACKING MATERIALS
*********************************

| Part No. | Description | Remark |
|---|---|---|
| *3-340-514-01 | BAG, PROTECTION | |
| *3-732-952-01 | CUSHION (UPPER) | |
| *3-732-953-01 | CUSHION (LOWER) | |
| 3-786-788-21 | MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH) (CCD-F35) | |
| 3-786-788-81 | MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH)(CCD-F36) | |
| 3-786-788-91 | MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH)(CCD-F280) | |

*****************************************************************

### ACCESSORIES AND PACKING MATERIALS(KIT)
**************************************

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| | *3-733-937-01 | INDIVIDUAL CARTON (CCD-F35) | |
| | *3-733-937-11 | INDIVIDUAL CARTON (CCD-F36) | |
| | *3-733-937-61 | INDIVIDUAL CARTON (CCD-F280) | |
| | *1-571-163-11 | SWITCH, ANTENNA CHANGE (CABLE) | |
| | *3-733-938-01 | CUSHION, ACC | |
| | ** AC-V30 | | |
| | *** NP-55 | | |

** MARK PART IS AVAILABLE FOR REPAIR SERVICE
*** MARK PART IS AVAILABLE AS A OPTIONAL ACCESSORY

*****************************************************************

### HARDWARE LIST
*************

### SCREW

| Part No. | Description |
|---|---|
| 7-621-281-15 | SCREW +P 2X2 |
| 7-621-772-00 | SCREW +B 2X3 |
| 7-627-555-88 | SCREW, PRECISION +P 1.4X1.8 |
| 7-627-553-37 | SCREW, PRECISION +P 2X3 TYPE 3 |
| 7-627-553-37 | SCREW (M2X3), SPECIAL HEAD |
| 7-627-553-48 | SCREW, PRECISION +P 2X4 TYPE 3 |

### STAINLESS BALL

| Part No. | Description |
|---|---|
| 7-671-156-01 | BALL, STAINLESS |

*****************************************************************

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

# SECTION 7
# CAMERA ADJUSTMENTS

**During the adjustment, see the adjustment element location to the adjustment from page 226.**

## 7-1. PRE-ADJUSTMENT PREPARATIONS (CAMERA BLOCK)

### 7-1-1. List of Servicing Jigs

- Oscilloscope
- Regulated power supply (2 units)
- Adjusting screwdriver
- Color monitor
- Vectorscope
- Digital voltmeter

| Ref. No. | Part Name | Part No. | Use |
|---|---|---|---|
| J-1 | Filter (C14) for color temperature correction | J-6080-054-A | Auto white balance confirmation |
| J-2 | ND filter 1.0 | J-6080-808-A | Max. gain adjustment (two used) |
| | ND filter 0.4 | J-6080-806-A | Iris adjustment, iris in/out adjustment (two used), max. gain adjustment |
| | ND filter 0.1 | J-6080-807-A | Iris adjustment, iris in/out adjustment |
| J-3 | Pattern box PTB-500 * | J-6029-140-A | |
| J-4 | Pattern box color chart | J-6020-250-A | |
| J-5 | Siemens star | J-6080-875-A | For flange back adjustment |
| J-6 | AF microcomputer data reading jig | J-6082-025-A | |
| J-7 | Remote control for adjustment | Modification of RM-95 | |

* PTB-100 is not available.

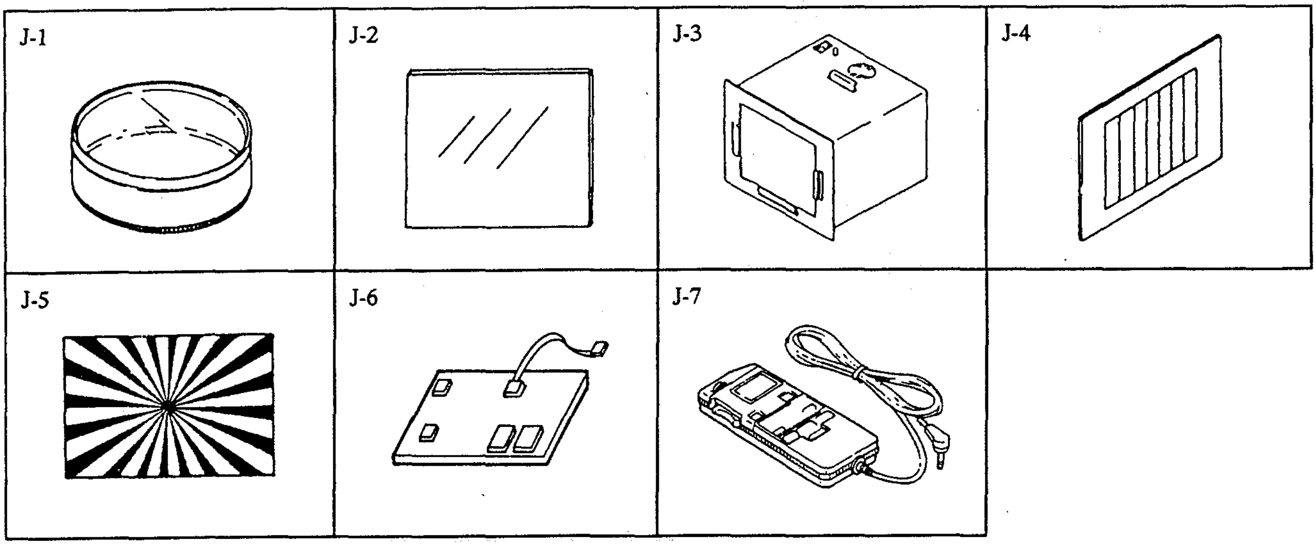


Fig. 7-1.

### 7-1-2. Preparations

**Note:** Refer to "2. DISASSEMBLY" for details on removal of the cabinet and various boards.

1) Connect the various devices for adjustment as shown in Fig. 7-3.
2) The EVF (electronic viewfinder) is needed for confirmation of the white balance mode and shutter speed. This can confirmed on the monitor screen by turning on the data screen (ON/OFF by S509 on VK-1 board). Remove CN901 on the CV-8 board when the EVF is not needed.
3) The mic amplifier (MA-31 board) is not needed. Remove CN401 on the CO-2 board.

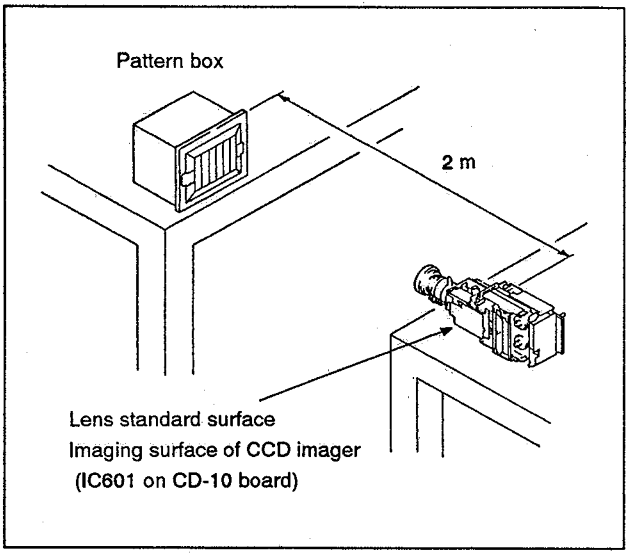

Pattern box
2 m
Lens standard surface
Imaging surface of CCD imager
(IC601 on CD-10 board)

Fig. 7-2.

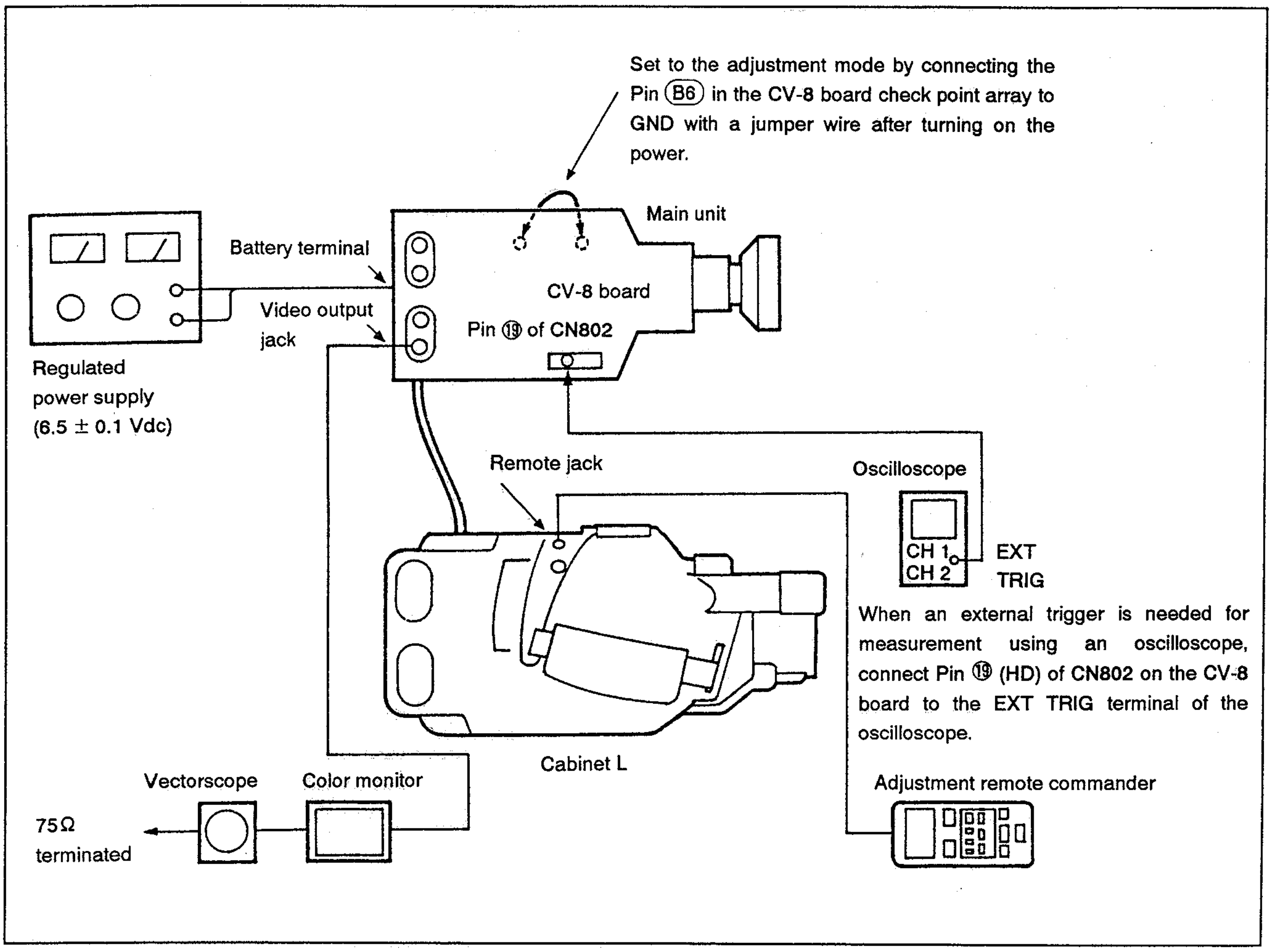

Set to the adjustment mode by connecting the Pin (B6) in the CV-8 board check point array to GND with a jumper wire after turning on the power.
Main unit
Battery terminal
CV-8 board
Video output jack
Pin ⑲ of CN802
Regulated power supply (6.5 ± 0.1 Vdc)
Remote jack
Oscilloscope
CH 1
CH 2
EXT TRIG
When an external trigger is needed for measurement using an oscilloscope, connect Pin ⑲ (HD) of CN802 on the CV-8 board to the EXT TRIG terminal of the oscilloscope.
Cabinet L
Vectorscope
Color monitor
75Ω terminated
Adjustment remote commander

Fig. 7-3.

### 7-1-3. Precautions

1) Setting of Switches
Unless indicated otherwise, the switches are set to the following positions and adjustment is made without a cassette inserted.
   1. Camera/video power switch (S501 on VK-1 board) ......camera
   2. Standby switch (S951 on RC-26 board) ......ON
   3. Auto-lock switch (S651 on DK-2 board) ......OFF
   4. White balance button (S654 on DK-2 board) ...... ☼ (indoors white balance mode)
   5. Shutter button (S652 on DK-2 board) ......normal (1/60)

2) Adjustment Order
As a rule, the adjustments are performed in the listed order.

3) Subjects
   1. Color bar chart (standard picture frame)
   When performing adjustment using the color bar chart, adjusting the picture frame shown in Fig. 7-4. (standard picture frame).
   2. White pattern (standard picture frame)
   Remove the color bar chart from the pattern box and use the zoom lever so that the white pattern has the same size and is the same position as the color bar chart (standard picture frame).

Color bar chart standard picture frame

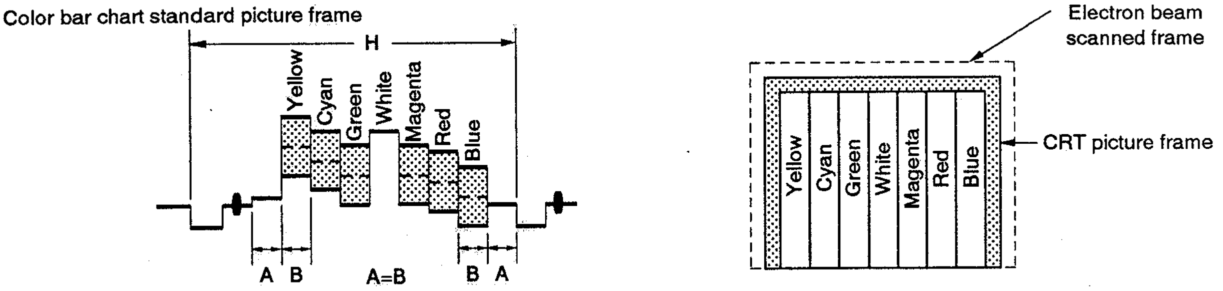


Fig. a (Video output terminal output waveform)

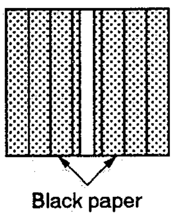
Fig. b (Picture on monitor TV)

Adjust the zooming and direction of the camera to obtain the output waveform shown in Fig. a and the monitor TV picture shown in Fig. b.

Fig. 7-4.

   3. All white pattern
   Remove the color bar chart from the pattern box and set the zoom lever fully to the TELE (54 mm) side.
   4. High luminance pattern
   Create the high luminance pattern as shown in Fig. 7-5., and adjust for the picture frame shown in Fig. 7-6.
   5. Siemens star (J-6080-875-A)
   Adjust the direction of the camera so that center of the Siemens star is lined up with the center of the monitor screen on the monitor TV screen.

High luminance pattern



Attach black paper over all sections of the pattern except for half the width of the white bar. Record this with the standard picture frame.

Fig. 7-5.

High luminance pattern

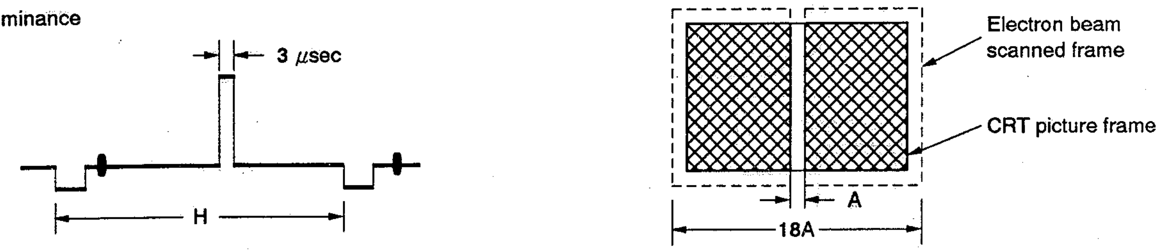


Fig. a (Video output terminal output waveform)

Fig. b (Picture on monitor TV)

Adjust the zooming and direction of the camera to obtain the output waveform shown in Fig. a and the monitor TV picture shown in Fig. b.

Fig. 7-6.

### 7-1-4. Adjustment Remote Commander

An EVR (electronic variable resistor) is used as the adjustment element for the camera block, replacing the conventional semi-fixed resistor. The EVR is controlled by the EVR/AWB microcomputer (IC601 on CV-8 board). This microcomputer reads the data written in the nonvolatile memory of the microcomputer and sends it to the EVR. The EVR D-A converts this data (8 bits for each adjustment point) and creates the adjustment voltage.
Thus, it is necessary to change the adjustment data contained in the nonvolatile memory when adjusting the camera block, and the adjustment memory is used for this purpose.
The adjustment remote commander performs bidirectional communications with the camera block microcomputer using the remote control signal lines (LINCS). Adjustment addresses and adjustment data increment/decrement commands are sent to the camera block microcomputer from the adjustment remote commander. Adjustment addresses and adjustment data are sent from the camera block microcomputer to the adjustment remote commander.

#### 1. Use of adjustment remote commander

Solder the lead wire to Pin (B6) (refer to 7-1-5) of the check point array on the CV-8 board.

1) Connect the adjustment remote commander to the remote terminal (J951 on RC-26 board). (Set the HOLD switch of the adjustment remote commander to the HOLD position (SERVICE position).)
2) Turn on the power of the main unit.
3) Connect Pin (B6) ($\overline{\text{CAM ADJ}}$) of the check point array to GND using a jumper wire.
   (This connection causes the EVR/AWB microcomputer to cease normal remote control operation and to begin adjustment dedicated communications.)
   **Note:** Be sure to make this connection only after turning on the power. The following will be displayed on the LCD of the adjustment remote commander if the connection is normal. (Adjustment data varies according to the unit.)

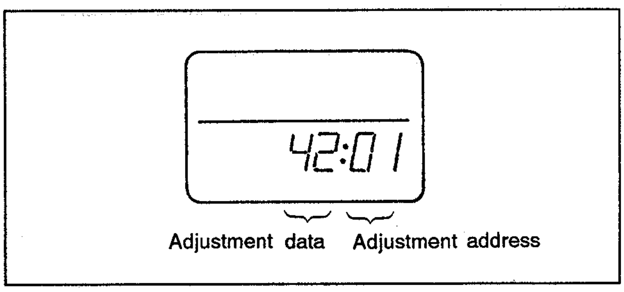


Fig. 7-7.

4) Designate the desired adjustment address using the adjustment remote commander. The adjustment address is incremented by pressing the FF ( ▸▸ ) button and decremented by pressing the REW ( ◂◂ ) button. (The adjustment address is indicated in decimal, and there are 89 addresses from 01 to 89. The adjustment address corresponds to the EVR (CV-8 board, IC608, IC609, IC804) output terminals. Refer to Table 7-3. for the adjustment contents of the various addresses.)

5) Perform adjustment by incrementing or decrementing the adjustment data.
The adjustment data is incremented by pressing the PLAY ( ► ) button. The adjustment data is decremented by pressing the STOP ( ■ ) button.
- The adjustment data is indicated in hexadecimal. There are 256 values from 00 to FF.

| Hexadecimal | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Indication on LCD | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | b | c | d | E | F |
| Decimal equivalent | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |

Table 7-1.

- The adjustment data corresponds to the EVR (CV-8 board, IC608, IC609, IC804) output voltage, and is as follows.

| Adjustment data<br>( ) is decimal equivalent | EVR output voltage |
|---|---|
| FF (=255) | Maximum value (approx. 5 Vdc) |
| F0 (=240) | ↑ |
| E0 (=224) | |
| D0 (=208) | |
| C0 (=192) | |
| B0 (=176) | |
| A0 (=160) | |
| 90 (=144) | |
| 80 (=128) | Center value (approx. 2.5 Vdc) |
| 70 (=112) | |
| 60 (=96) | |
| 50 (=80) | |
| 40 (=64) | |
| 30 (=48) | |
| 20 (=32) | |
| 10 (=16) | ↓ |
| 00 (=0) | Minimum value (approx. 0 Vdc) |

Table 7-2.

6) The adjustment address is changed using the FF ( ►► ) button or REW ( ◄◄ ) button to store the adjustment data in the nonvolatile memory of EVR/AWB microcomputer (IC601 on CV-8 board).
(The new adjustment data is not stored in the nonvolatile memory unless this operation is performed.)

## 2. Precautions on use of adjustment remote commander

It is possible to accidentally erase correct adjustment data due to an error in operation of the adjustment remote commander. In order to prevent this, we recommend that you make a note of all adjustment data before adjustment and record the new adjustment data after completing each adjustment item.

### 3. Adjustment address table

| Adjustment Address | Adjustment Voltage Output Terminal | Adjustment Item | Remarks | Adjustment Data Memo Column |
|---|---|---|---|---|
| 01 | Pin ⑱ of IC609 | DELTA R | Auto white balance adjustment | |
| 02 | Pin ⑲ of IC609 | DELTA B | | |
| 03 | Pin ② of IC609 | TITLE PEDESTAL | | |
| 04 | Pin ③ of IC609 | C-PED | Fixed at “99” | 99 |
| 05 | Pin ④ of IC609 | R-Y GAIN | Color reproduction (gain) adjustment | |
| 06 | Pin ⑤ of IC609 | B-Y GAIN | | |
| 07 | Pin ⑥ of IC609 | B-Y HUE | Color reproduction (hue) adjustment | |
| 08 | Pin ⑦ of IC609 | R-Y HUE | | |
| 09 | Pin ⑧ of IC609 | C LEVEL | | |
| 10 | Pin ⑨ of IC609 | Y GAIN | | |
| 11 | Pin ⑫ of IC609 | R GAIN | Pre-white balance adjustment | |
| 12 | Pin ⑬ of IC609 | B GAIN | | |
| 13 | Pin ⑱ of IC608 | C2 GAIN | Chroma matrix adjustment | |
| 14 | Pin ⑲ of IC608 | C1 GAIN | | |
| 15 | Pin ② of IC608 | Y1 GAIN | Y *matrix adjustment* | |
| 16 | Pin ③ of IC608 | HUE CONT | Fixed at “AE” | AE |
| 17 | Pin ④ of IC608 | WC | White clip adjustment | |
| 18 | Pin ⑤ of IC608 | Y LEVEL | | |
| 19 | Pin ⑥ of IC608 | SET UP | | |
| 20 | Pin ⑦ of IC608 | SYNC LEVEL | | |
| 21 | Pin ⑧ of IC608 | APERTURE | Aperture adjustment | |
| 22 | Pin ⑨ of IC608 | BURST LEVEL | | |
| 23 | | ——— | | – |
| 24 | Pin ⑤ of IC804 | CHARACTOR | | |
| 25 | Pin ⑱ of IC804 | IRIS | | |
| 26 | Pin ⑲ of IC804 | FOCUS SPEED | | |
| 27 | Pin ② of IC804 | HALL OFFSET | | |
| 28 | Pin ③ of IC804 | MAX GAIN | | |
| 29 | Pin ④ of IC804 | TITLE A/D | | |
| 30 | | ——— | | – |
| 31 | Pin ⑥ of IC804 | V SUB | | |
| 32 | Pin ⑦ of IC804 | AGC | | |
| 33 | | ——— | | – |
| 34 | | ——— | | – |
| 35 | | ——— | | – |
| 36 | | ——— | | – |

Table 7-3. (1)

<table>
<tr><th>Adjustment Address</th><th>Adjustment Voltage Output Terminal</th><th>Adjustment Item</th><th>Remarks</th><th>Adjustment Data Memo Column</th></tr>
<tr><td>37</td><td></td><td>MODE</td><td>The following adjustment modes are selected by changing the adjustment data.
<table>
<tr><th>Adjustment data</th><th>Adjustment mode</th></tr>
<tr><td>00</td><td>Release</td></tr>
<tr><td>01</td><td>Focus hunching</td></tr>
<tr><td>03</td><td>Zoom position</td></tr>
<tr><td>05</td><td>Hall, iris close</td></tr>
<tr><td>07</td><td>Hall, iris open</td></tr>
<tr><td>09</td><td>Hall in/out threshold</td></tr>
<tr><td>0B</td><td>Auto-focus LLA</td></tr>
<tr><td>FD</td><td>Auto-focus filter fixed at FA</td></tr>
<tr><td>FF</td><td>Auto-focus filter fixed at FH</td></tr>
</table></td><td>00</td></tr>
<tr><td>38</td><td></td><td>LLA</td><td>Auto-focus LLA adjustment</td><td></td></tr>
<tr><td>39</td><td></td><td>MACRO</td><td></td><td></td></tr>
<tr><td>40</td><td></td><td>IN/OUT DOOR</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>41</td><td></td><td>LOW CONT</td><td>Fixed at 03</td><td>03</td></tr>
<tr><td>42</td><td></td><td>BASE H</td><td>Auto-focus adjustment</td><td></td></tr>
<tr><td>43</td><td></td><td>PLUS</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>44</td><td></td><td>STEP</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>45</td><td></td><td>Hysteresis</td><td></td><td></td></tr>
<tr><td>46</td><td></td><td>HALL LEVEL</td><td></td><td></td></tr>
<tr><td>47</td><td></td><td>HANT LIMIT</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>48</td><td></td><td>FA BASE</td><td>Fixed at 28</td><td>28</td></tr>
<tr><td>49</td><td></td><td>KATAMUKI</td><td>Fixed at 06</td><td>06</td></tr>
<tr><td>50</td><td></td><td>TOPCHECK-THR</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>51</td><td></td><td>BACK RUSH</td><td>Fixed at 02</td><td>02</td></tr>
<tr><td>52</td><td></td><td>TOP CHECK SEARCH</td><td>Fixed at 01</td><td>01</td></tr>
<tr><td>53</td><td></td><td>TOP LIMIT</td><td>Fixed at 03</td><td>03</td></tr>
<tr><td>54 to 58</td><td></td><td>————</td><td>Not used</td><td>–</td></tr>
<tr><td>59</td><td></td><td>START R</td><td>Preset R CONT data for reset start</td><td>30</td></tr>
<tr><td>60</td><td></td><td>START B</td><td>Preset B CONT data for reset start</td><td>41</td></tr>
<tr><td>61</td><td></td><td>BTM SLP R</td><td>Fixed at 22</td><td>22</td></tr>
<tr><td>62</td><td></td><td>BTM SLP B</td><td>Fixed at 10</td><td>10</td></tr>
<tr><td>63</td><td></td><td>MDL SLP R</td><td>Auto white balance adjustment</td><td></td></tr>
<tr><td>64</td><td></td><td>MDL SLP B</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>65</td><td></td><td>TOP SLP R</td><td rowspan="2">Auto white balance adjustment</td><td></td></tr>
<tr><td>66</td><td></td><td>TOP SLP B</td><td></td></tr>
<tr><td>67</td><td></td><td>KEIKO R</td><td>Fixed at 10</td><td>10</td></tr>
<tr><td>68</td><td></td><td>KEIKO B</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>69</td><td></td><td>BTM UP</td><td>Fixed at 89</td><td>89</td></tr>
<tr><td>70</td><td></td><td>BTM DWN</td><td>Fixed at 61</td><td>61</td></tr>
<tr><td>71</td><td></td><td>MDL UP</td><td>Fixed at 7C</td><td>7C</td></tr>
<tr><td>72</td><td></td><td>MDL DWN</td><td>Fixed at 6A</td><td>6A</td></tr>
<tr><td>73</td><td></td><td>TOP UP</td><td rowspan="2">Auto white balance adjustment</td><td></td></tr>
<tr><td>74</td><td></td><td>TOP DWN</td><td></td></tr>
</table>

Table 7-3. (2)

<table>
<tr><th>Adjustment Address</th><th>Adjustment Voltage Output Terminal</th><th>Adjustment Item</th><th>Remarks</th><th>Adjustment Data Memo Column</th></tr>
<tr><td>75</td><td></td><td>KEIKO DWN</td><td>Fixed at 8C</td><td>8C</td></tr>
<tr><td>76</td><td></td><td>R DWN LMT</td><td>Fixed at 1E</td><td>1E</td></tr>
<tr><td>77</td><td></td><td>B UP LMT</td><td rowspan="5">Auto white balance adjustment</td><td></td></tr>
<tr><td>78</td><td></td><td>R OUT LMT</td><td></td></tr>
<tr><td>79</td><td></td><td>B OUT LMT</td><td></td></tr>
<tr><td>80</td><td></td><td>R OUTDOOR</td><td></td></tr>
<tr><td>81</td><td></td><td>B OUTDOOR</td><td></td></tr>
<tr><td>82</td><td></td><td>AWB</td><td>Fixed at 23</td><td>23</td></tr>
<tr><td>83</td><td></td><td>DELAY TM</td><td>Auto white balance tracking speed. Fixed at 15</td><td>15</td></tr>
<tr><td>84</td><td></td><td>FAST TM</td><td>Fixed at 20</td><td>20</td></tr>
<tr><td>85</td><td></td><td>CAM DDS 0</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>86</td><td></td><td></td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>87</td><td></td><td></td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>88</td><td></td><td>CAM ALN</td><td>Fixed at 00</td><td>00</td></tr>
<tr><td>89</td><td></td><td>AWB mode</td><td>The following auto white balance adjustment modes are selected by changing the adjustment data.
<table>
<tr><th>Adjustment data</th><th>Adjustment mode</th></tr>
<tr><td>00</td><td>Release</td></tr>
<tr><td>01</td><td>Indoor (☼) preset value output</td></tr>
<tr><td>02</td><td>Outdoor (☀) preset value output</td></tr>
<tr><td>03</td><td>Data hold</td></tr>
<tr><td>05</td><td>Indoor/Outdoor Evaluation invalid</td></tr>
<tr><td>10</td><td></td></tr>
<tr><td>E0</td><td>Auto white balance adjustment possible</td></tr>
<tr><td>F0</td><td>Auto white balance tracking zone evaluation invalid</td></tr>
</table></td><td>00</td></tr>
</table>

Table 7-3. (3)

### 7-1-5. Check Point Array

Almost all of the measurement points for camera block adjustment are located in the check point array on the CV-8 board. Solder short lead wires onto the terminals needed for adjustment and connect an oscilloscope, etc.

The terminal numbers and signal names for the check point array are shown in Table 7-4.

| Terminal No. | Signal Name | Terminal No. | Signal Name |
|---|---|---|---|
| A1 | G OUT | B1 | N.C |
| A2 | N.C | B2 | N.C |
| A3 | N.C | B3 | Y(LPF)OUT |
| A4 | Y0 | B4 | V SUB |
| A5 | Y1 | B5 | AW ADJ |
| A6 | C0 | B6 | $\overline{\text{CAM ADJ}}$ |
| A7 | C1 | B7 | MODE |
| A8 | N.C | B8 | VIDEO OUT |
| A9 | YH | B9 | SHUTTER EN |
| A10 | N.C | B10 | GND |
| A11 | N.C | B11 | CCD OUT |

Table 7-4.

* N.C......no connection

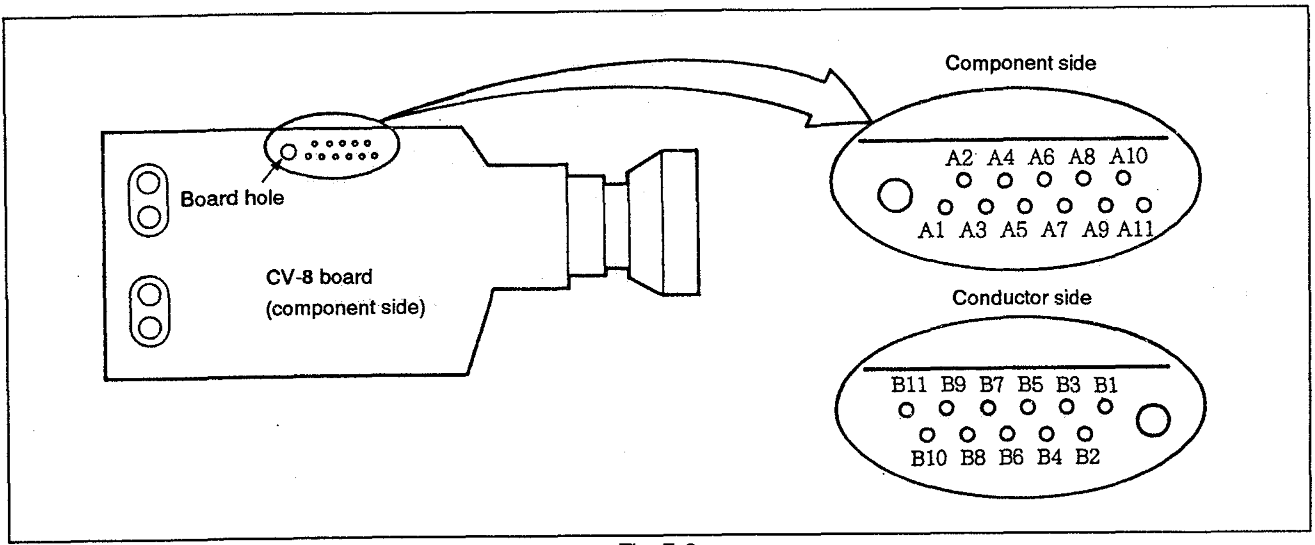

Component side
A2 A4 A6 A8 A10
A1 A3 A5 A7 A9 A11
Board hole
CV-8 board
(component side)
Conductor side
B11 B9 B7 B5 B3 B1
B10 B8 B6 B4 B2

Fig. 7-8.

### 7-1-6. AF Microcomputer Data Reading Jig

The AF microcomputer data reading jig converts the serial data (output data varies according to hall (iris) state, focus state, focus motor speed, zoom ring position, etc.) for adjustment output from the AF microcomputer (IC802 on CV-8 board) into a 2-digit hexadecimal code and displays it on the LED.

Connections:
Connect as shown in the diagram below.

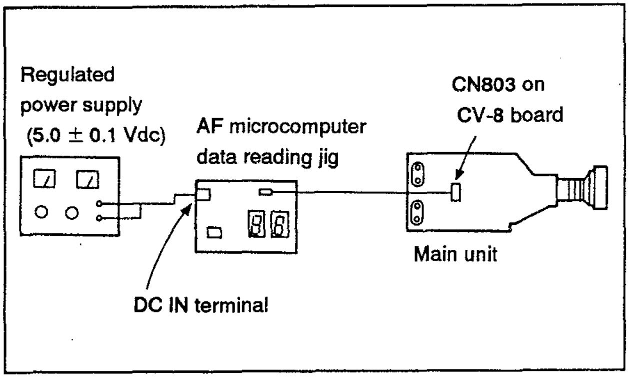

Regulated
power supply
(5.0 ± 0.1 Vdc)
AF microcomputer
data reading jig
CN803 on
CV-8 board
Main unit
DC IN terminal

Fig. 7-9.

### 7-1-7. Data Processing

For some of the adjustment items, calculation from the data (hexadecimal) indicated on the AF microcomputer data reading jig and adjustment remote commander is needed to obtain the adjustment data. In these cases, convert the hexadecimal values to decimal before calculation and reconvert the result to hexadecimal to obtain the adjustment data. A hexadecimal-decimal conversion table is shown in Table 7-5.

Hexadecimal-Decimal Conversion Table

| Hexadecimal lower digit / Hexadecimal upper digit | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A (A) | B (b) | C (c) | ② ↓ D (d) | E (E) | F (F) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 1 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| 2 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 |
| 3 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 |
| 4 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 |
| 5 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 |
| 6 | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 |
| 7 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 125 | 126 | 127 |
| 8 | 128 | 129 | 130 | 131 | 132 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 | 143 |
| 9 | 144 | 145 | 146 | 147 | 148 | 149 | 150 | 151 | 152 | 153 | 154 | 155 | 156 | 157 | 158 | 159 |
| A( A ) | 160 | 161 | 162 | 163 | 164 | 165 | 166 | 167 | 168 | 169 | 170 | 171 | 172 | 173 | 174 | 175 |
| ① → B( b ) | 176 | 177 | 178 | 179 | 180 | 181 | 182 | 183 | 184 | 185 | 186 | 187 | 188 | 189 | 190 | 191 |
| C( c ) | 192 | 193 | 194 | 195 | 196 | 197 | 198 | 199 | 200 | 201 | 202 | 203 | 204 | 205 | 206 | 207 |
| D( d ) | 208 | 209 | 210 | 211 | 212 | 213 | 214 | 215 | 216 | 217 | 218 | 219 | 220 | 221 | 222 | 223 |
| E( E ) | 224 | 225 | 226 | 227 | 228 | 229 | 230 | 231 | 232 | 233 | 234 | 235 | 236 | 237 | 238 | 239 |
| F( F ) | 240 | 241 | 242 | 243 | 244 | 245 | 246 | 247 | 248 | 249 | 250 | 251 | 252 | 253 | 254 | 255 |

**Note:** ( ) is the indication on the jig or adjustment remote commander.

**Example:** The indication on the jig or adjustment remote commander is BD ( b d ).
As the upper digit is B ( b ) and the lower digit is D ( d ), a decimal value of 189 is obtained from the intersection of ① and ② in the above table.

Table 7-5.

## 7-2. CAMERA SYSTEM ADJUSTMENT

### 7-2-1. Flange Back Adjustment

| | |
|---|---|
| Subject | Siemens star (2m directly in front of lens reference ("ȹ" marked) |
| Measurement Point | Check with a monitor TV |
| Measuring Instrument | |
| Adjustment Element | Flange back adjusting pin |
| Tools | Phillips screwdriver, flat blade (–) screwdriver |

Adjusting method:

1) Press the FOCUS switch (S655 on DK-2 board) to set to the MANUAL mode.
2) Position a Siemens star 2m directly in front of the lens reference plane (See Fig. 7-2.).
3) Orient the camera block to have the center of the Siemens star imaged on the monitor TV screen coincide with the monitor screen center.
4) Check to assure the smooth motion of the lens zoom lever to both its extreme WIDE position (9 mm) and TELE position (54 mm), and then set it at the extreme WIDE position. (In this process, also check the monitor image to assure proper zooming operation.)
5) Select adjustment address 37 with the adjustment remote commander and enter adjustment data of 07. (Iris open mode)
   At this time, adjust the illumination on the Siemens star or place an ND filter over the lens, and confirm that the proper image is displayed on the monitor TV screen.
6) Set the lens focusing mark at the center of "2".

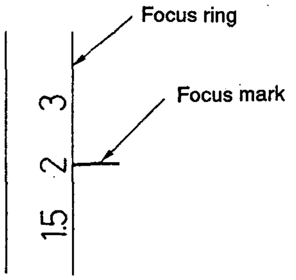


Fig. 7-10.

7) Loosen flange back setscrew ❶ with a Phillips screwdriver. (See Fig. 7-12.)
8) By turning the flange back adjusting pin ❷ while watching the monitor screen, attain the optimum definition of a wedge at the Siemens star center on the screen. (Turn it a few turns to the left and right to ensure optimum definition.)
   **Note:** Do not turn the adjusting pin excessively in either direction.
9) While holding the flange back adjusting pin ❷ to prevent further rotation, retighten the flange back setscrew ❶.
10) With the zoom lever fixed at its WIDE end, turn the focusing ring and set it to the position that provides the optimum definition image of the wedge. Check to assure the focusing mark position is within the range shown in Fig. 7-11. Also, rotate the focusing ring to the close (1.1m) and far (∞) extremes and confirm that the wedge is no longer in focus.

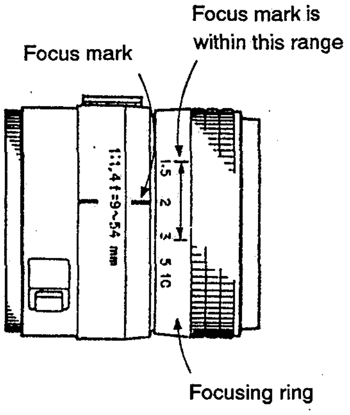


Fig. 7-11.

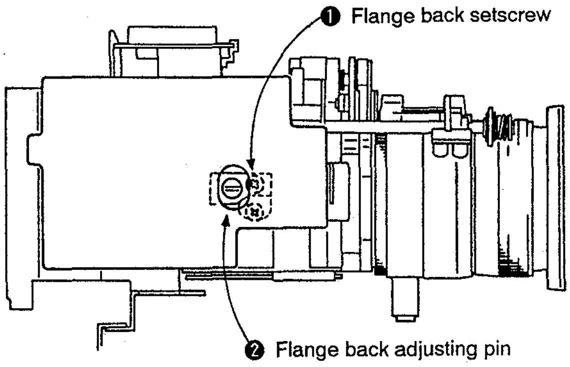


Fig. 7-12.

11) Fix the zoom lever at the extreme TELE position.
12) Turn the focusing ring and stop at the position where the wedge has optimum definition.
    Confirm that the focus mark is within ± 1.5 mm of "2".
13) Select adjustment address 37 with the adjustment remote commander and enter adjustment data of 00. (Iris normal)
14) Change the adjustment address to store the adjustment data in the memory.

### 7-2-2. 15V Power Supply Adjustment (PS-180 Board)

| | |
|---|---|
| Measurement Point | Pin ② of W902 |
| Measuring Instrument | Digital voltmeter |
| Adjustment Element | RV937 |
| Specified Value | 15.0 ± 0.5 Vdc |

Adjustment method:

1) Adjust to 15.0 ± 0.5 Vdc with RV937.

### 7-2-3. Power Supply Check (PS-180 Board)

| | |
|---|---|
| Measuring Instrument | Digital voltmeter |
| CAM 5V Check | |
| Measurment Point | Pin ④ of W902 |
| Specified Value | 5.1 ± 0.15 Vdc |
| 32V Check | |
| Measurement Point | Pin ① of W902 |
| Specified Value | 32 ± 2 Vdc |

Checking method:

1) Each power supply voltage should be at its specified level.

### 7-2-4. EVR Initial Settings

Set to the following initial settings of the adjustment data only when the EVR/AWB microcomputer (IC602 on CV-8 board) was replaced.

| Adjustment Address | Adjustment Data Initial Value | Adjustment Address | Adjustment Data Initial Value | Adjustment Address | Adjustment Data Initial Value |
|---|---|---|---|---|---|
| 01 (DELTA R) | 50 | 43 (PLUS) | 00 | 68 (KEIKO B) | 00 |
| 02 (DELTA B) | 50 | 44 (STEP) | 00 | 69 (BTM UP) | 89 |
| 04 (C-PED) | 99 | 47 (HANT LIMIT) | 00 | 70 (BTM DWN) | 61 |
| 16 (HUE CONT) | AE | 48 (FA BASE) | 28 | 71 (MDL UP) | 7C |
| 17 (WHITE CLIP) | FF | 49 (KATAMUKI) | 06 | 72 (MDL DWN) | 6A |
| 18 (Y LEVEL) | 40 | 50 (TOP CHECK-THR) | 00 | 75 (KEIKO DWN) | 8C |
| 25 (IRIS) | 80 | 51 (BACK RUSH) | 02 | 76 (R DWN LMT) | 1E |
| 28 (MAX GAIN) | B0 | 52 (TOP CHECK-SEARCH) | 01 | 82 (AWB) | 23 |
| 31 (V SUB) | 80 | 53 (TOP LIMIT) | 03 | 83 (D TM) | 15 |
| 32 (AGC) | FF | 59 (START R) | 30 | 84 (F TM) | 20 |
| 37 (MODE) | 00 | 60 (START B) | 41 | 85 (CAM DDS O) | 00 |
| 38 (LLA) | 3F | 61 (BTM SLP R) | 22 | 86 | 00 |
| 39 (MACRO) | 00 | 62 (BTM SLP B) | 10 | 87 | 00 |
| 40 (IN/OUT DOOR) | 00 | 63 (MDL SLP R) | 00 | 88 (CAM ALN) | 00 |
| 41 (LOW CONT) | 03 | 64 (MDL SLP B) | 00 | 89 (AWB MODE) | 00 |
| 42 (BASE H) | 03 | 67 (KEIKO R) | 10 | | |

Table 7-6.

Adjustment method:

1) Set the adjustment data at the various adjustment addresses to the initial values using the adjustment remote commander.
2) Change the adjustment address to store the last adjustment data in the memory.

### 7-2-5. V SUB Adjustment (CV-8 Board)

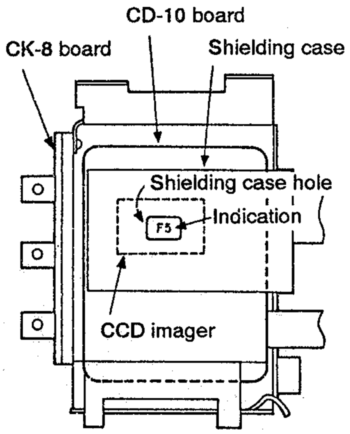
| | |
|---|---|
| Subject | Not needed |
| Measurement Point | Pin (B4) (V SUB) of check point array |
| Measuring Instrument | Digital voltmeter |
| Adjustment Address | 31 (V SUB) |
| Specified Value | (Voltage indicated by the imager) ± 0.05 Vdc |

Adjustment method:

1) Set the adjustment address to 31 using the adjustment remote commander.
2) Change the adjustment data using the adjustment remote commander to set the VSUB voltage (Voltage indicated by the imager) to ± 0.05 Vdc.
3) Change the adjustment address to store the adjustment data in the memory.

**Note:** The VSUB specified voltage is expressed by two digits with the integer section abbreviation and decimal section by the imager.

| Integer section abbreviation | Integer value |
|---|---|
| 1 | 1 |
| ⋮ | ⋮ |
| 9 | 9 |
| A | 10 |
| B | 11 |
| C | 12 |
| D | 13 |
| E | 14 |
| F | 15 |
| G | 16 |
| H | 17 |
| I | 18 |
| J | 19 |
| K | 20 |
| L | 21 |



(Example)
If F5 is indicated, the integer value is F → 15 and decimal value is 5 → 0.5. Thus, the VSUB voltage is 15 + 0.5 = 15.5 (Vdc).

Fig. 7-13.

### 7-2-6. Hall Adjustment (CV-8 Board)

| | |
|---|---|
| Subject | All black (cover lens with black cap) |
| Signal | CN803 |
| Measurement Point | AF microcomputer data reading jig |
| Measuring Instrument | RV801 |
| Adjusment Address | 27 (Hall Offset) |
| Specified Value | When iris closed: Minimum value of 01 to 04<br>When iris open: 3D or 3E |

Adjustment method:

1) Set the adjustment address to 37 with the adjustment remote commander, and set the adjustment data to 05. (Setting when iris closed)
2) Change the adjustment address to 27.
3) Change the adjustment data until the indication on the AF microcomputer data reading jig is the minimum value in the range of 01 to 04. (Hall offset adjustment)
4) Change the adjustment address to 37 and set the adjustment data to 07. (Setting when iris open)
5) Adjust RV801 until the indication on the AF microcomputer data reading jig is either 3D or 3E. (3D is indicated as 3 d.)
6) Repeat steps 1) through 5) until the specified values are satisfied.
7) Set the adjustment address to 37 and set the adjustment data to 00. (Releases adjustment mode)
8) Change the adjustment address to store the adjustment data in the memory.

### 7-2-7. Iris Adjustment (CV-8 Board)

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Filter | ND filter 0.4 and 0.1 |
| Measurement Point | Pin (B11) (CCD OUT) of check point array |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 25 (Iris) |
| Specified Value | 360 ± 20 mVp-p |

Adjustment method:

1) Set the adjustment address to 25 with the adjustment remote commander.
2) Without attaching an ND filter, change the adjustment data with the adjustment remote commander to set the IRIS OUT signal level to 360 ± 20 mVp-p.
3) Attach the ND filter 0.5 (0.4 ± 0.1) to the front of the lens and confirm that there is a smooth change in the signal level.
4) Remove the ND filter and confirm that the signal level is 360 ± 20 mVp-p.
5) Repeat 2) through 4) if the specified value is not met.
6) Change the adjustment address to store the adjustment data in the memory.

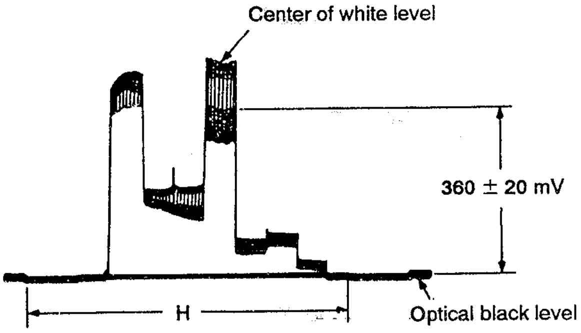


Fig. 7-14.

### 7-2-8. Iris In/Out Adjustment (CV-8 Board)

| | |
|---|---|
| Subject | White pattern standard picture frame |
| Filter | ND filter 0.4 (two) and 0.1 (one) |
| Measurement Point | CN803 |
| Measuring Instrument | AF microcomputer data reading jig |
| Adjustment Address | 46 (hall level)<br>45 (hysteresis) |

Adjustment method:

1) Cover the lens with the ND filter 0.8 (0.4+0.4).
2) Set the adjustment address to 37 with the adjustment remote commander and set the adjustment data to 09. (Hall in/out threshold mode setting)
3) Read the data indicated on the AF microcomputer data reading jig. This data will be a.
4) Change the adjustment address to 46 and enter a as the adjustment data.
5) Remove the ND filter 0.8 and replace it with ND filter 0.5 (0.4+0.1).
6) Read the data indicated on the AF microcomputer data reading jig. This data will be b.
7) Subtract data b from data a to obtain data c.

   (Refer to Table 7-5. Hexadecimal-Decimal Conversion Table)

   (Example)

   If a=1A and b=15, c=a−b =1A(26) − 15(21) =05

   ( ) indicates decimal value
8) Obtain the hysteresis data from data c using the table below.

| Data c | Hysteresis Data |
|---|---|
| 02, 03 | 01 |
| 04, 05, 06 | 02 |
| 07, 08, 09 | 03 |

   (Example)

   The hysteresis data is 02 if c=05.
9) Change the adjustment address to 45 and enter the hysteresis data as the adjustment data.
10) Change the adjustment address to 37 and set the adjustment data to 00.

    (Releases hall in/out threshold mode)
11) Change the adjustment address to store the adjustment data in the memory.

### 7-2-9. AGC Adjustment (CV-8 Board)

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | Pin (B3) (Y (LPF) OUT) of check point array |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 32 (AGC) |
| Specified Value | 160 ± 5 mVp-p |

Adjustment method:

1) Set the adjustment address to 32 using the adjustment remote commander.
2) Change the adjustment data with the adjustment remote commander to set the Y (LPF) signal level to 160 ± 5 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

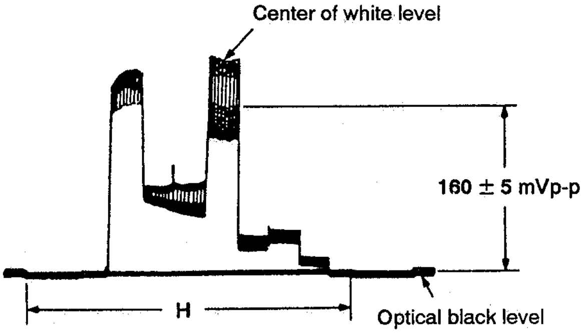


Fig. 7-15.

### 7-2-10. Y Signal Matrix Adjustment (CV-8 Board)

| | |
|---|---|
| Subject | Color bar standard picture frame |
| Measurement Point | 1: Pin (A4) (Y0) of check point array<br>2: Pin (A5) (Y1) of check point array |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 15 (Y1 GAIN) |
| Specified Value | Y1 signal level=Y0 signal level |

Adjustment method:

1) Connect the oscilloscope to Pin (A4) of the check point array and measure the Y0 signal level.
2) Connect the oscilloscope to Pin (A5) of the check point array.
3) Set the adjustment address to 15 using the adjustment remote commander.
4) Change the adjustment data until the Y1 signal level is the same as the Y0 signal level measured in 1).
5) Change the adjustment address to store the adjustment data in the memory.

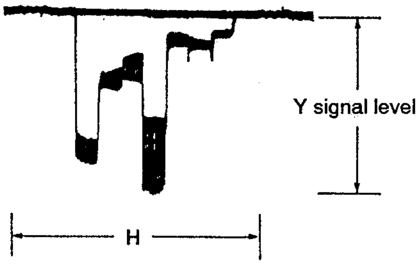


Fig. 7,16.

### 7-2-11. Chroma Signal Matrix Adjustment (1) (CV-8 Board)

| | |
|---|---|
| Subject | Color bar standard picture frame |
| Measurement Point | 1: Pin (A6) (C0) of check point array<br>2: Pin (A7) (C1) of check point array |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 14 (C1 GAIN) |
| Specified Value | C1 signal level=C0 signal level |

Adjustment method:

1) Connect the oscilloscope to Pin (A6) of the check point array and measure the C0 signal level. (The C0 signal level is the larger of the CR and CB signal levels.)
2) Connect the oscilloscope to Pin (A7) of the check point array.
3) Set the adjustment address to 14 using the adjustment remote commander.
4) Change the adjustment data until the C1 signal level is the same as the C0 signal level measured in 1).
5) Change the adjustment address to store the adjustment data in the memory.

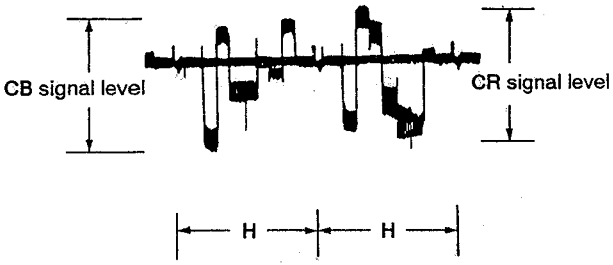


Fig. 7-17. C0 and C1 Signal Levels

### 7-2-12. Chroma Signal Matrix Adjustment (2) (CV-8 Board)

| | |
|---|---|
| Subject | Color bar standard picture frame |
| Measurement Point | CH1 (X): collector of Q643 (B-Y)<br>CH2 (Y): collector of Q613 (R-Y) |
| Measuring Instrument | Oscilloscope (X-Y mode) |
| Adjustment Address | 13 (C2 GAIN) |
| Specified Value | Separate color luminance points become one. |

**Note:** Adjustment can be made in the same manner using a vectorscope.
(Vectorscope connection terminal: video output terminal)

Adjustment method:

1) Set the adjustment address to 13 using the adjustment remote commander.
2) Change the adjustment data so that the two separate color luminance points become one respectively.
3) Change the adjustment address to store the adjustment data in the memory.

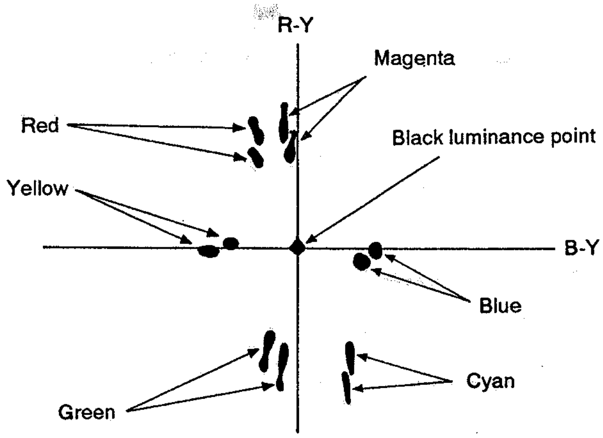


Fig. 7-18.

### 7-2-13. YH Level Adjustment (CV-8 Board)

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | Pin (A9) (YH) of check point array |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 10 (Y GAIN) |
| Specified Value | 900 ± 40 mVp-p |

Adjustment method:

1) Set the adjustment address to 10 with the adjustment remote commander.
2) Change the adjustment data with the adjustment remote commander to set the YH signal level to 900 ± 40 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

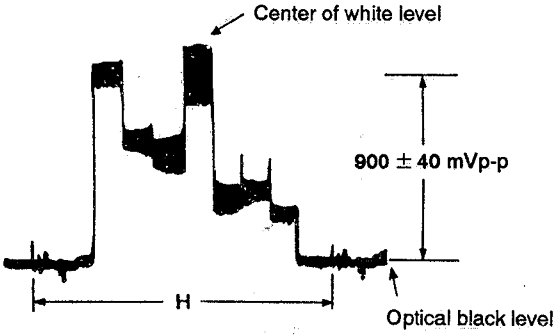


Fig. 7-19.

### 7-2-14. Sync Level Adjustment (CV-8 Board)

| | |
|---|---|
| Subject | All black (cover lens with black cap) |
| Measurement Point | Pin (B8) (VIDEO OUT) of check point array |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 20 (SYNC LEVEL) |
| Specified Value | 140 ± 5 mVp-p |

Adjustment method:

1) Set the adjustment address to 20 with the adjustment remote commander.
2) Change the adjustment data with the adjustment remote commander to set the sync level to 140 ± 5 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

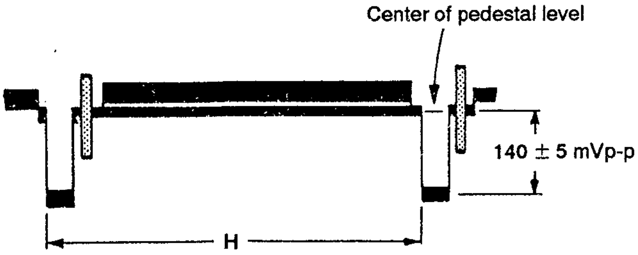


Fig. 7-20.

### 7-2-15. Setup Adjustment (CV-8 Board)

| | |
|---|---|
| Subject | All black (cover lens with black cap) |
| Measurement Point | Pin (B8) (VIDEO OUT) of check point array |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 19 (SET UP) |
| Specified Value | 20 ± 5 mV |

**Note:** 1) and 2) are steps taken to reduce noise.

Adjustment method:

1) Set the address to 21 (APERTURE) with the adjustment remote commander, and enter 00 as the adjustment data after making a note of the adjustment data for this at address.
2) Set the address to 28 (MAX GAIN) with the adjustment remote commander, and enter 00 as the adjustment data after making a note of the adjustment data for this address.
3) Set the adjustment address to 19 with the adjustment remote commander.
4) Change the adjustment data with the adjustment remote commander to set the setup level to 20 ± 5 mV.
5) Set the adjustment address to 21 and enter the adjustment data recorded in 1).
6) Set the adjustment address to 28 and enter the adjustment data recorded in 2).
7) Change the adjustment address to store the adjustment data in the memory.

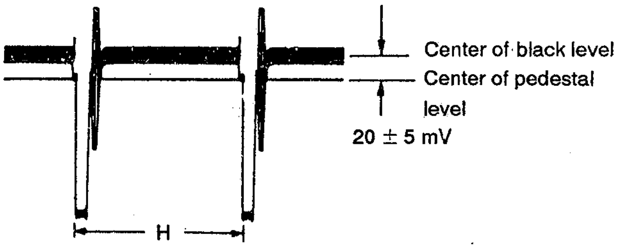


Fig. 7-21.

### 7-2-16. Y Level Adjustment (CV-8 Board)

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | Pin (B8) (VIDEO OUT) of check point array |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 18 (Y LEVEL) |
| Specified Value | 330 ± 10 mV |

Adjustment method:

1) Set the adjustment address to 17 with the adjustment remote commander, and make a note of the adjustment data for this address.
2) Set the adjustment data to FF with the adjustment remote commander.
3) Set the adjustment address to 18 with the adjustment remote commander.
4) Change the adjustment data with the adjustment remote commander to set the Y signal level to 330 ± 10 mV.
5) Set the adjustment address to 17 and enter the adjustment data recorded in 1).
6) Change the adjustment address to store the adjustment data in the memory.

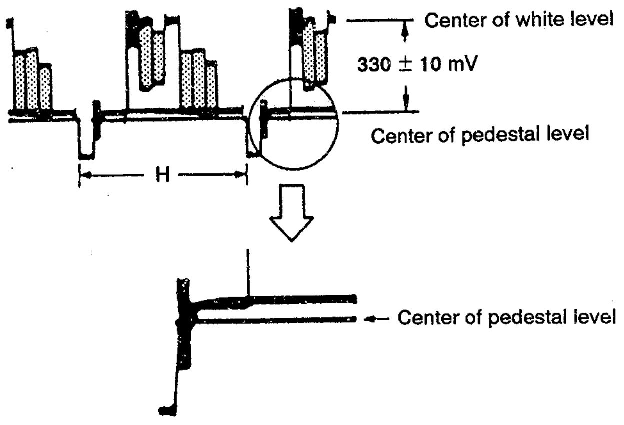


Fig. 7-22.

### 7-2-17. White Clip Adjustment (CV-8 Board)

| | |
|---|---|
| Subject | High luminance pattern |
| Measurement Point | Pin (B8) (VIDEO OUT) of check point array |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 17 (WHITE CLIP) |
| Specified Value | 420 ± 10 mV |

Adjustment method:

1) Set the adjustment address to 17 with the adjustment remote commander.
2) Change the adjustment data with the adjustment remote commander to set the white clip level to 420 ± 10 mV.
3) Change the adjustment address to store the adjustment data in the memory.

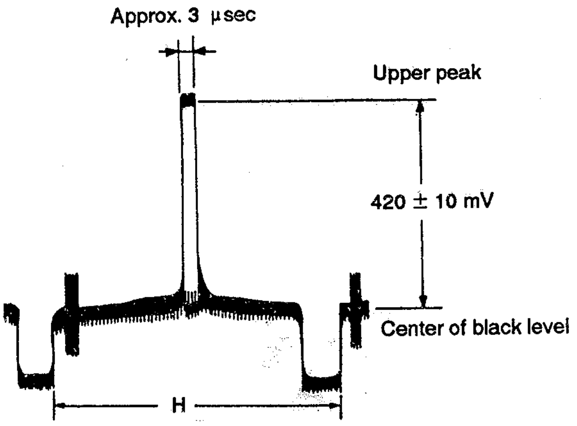


Fig. 7-23.

### 7-2-18. Aperture Adjustment (CV-8 Board)

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | Pin (B8) (VIDEO OUT) of check point array |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 21 (APERTURE) |
| Specified Value | 90 ± 10 mV |

Adjustment method:

1) Set the adjustment address 05 (R GAIN) with the adjustment remote commander, and make a note of the adjustment data at this address.
2) Set the adjustment data to 00 with the adjustment remote commander. (Reduces the amplitude of the chroma signal.)
3) Set the adjustment address to 21.
4) Focus the camera and set the aperture level (lower peak between green and white) to maximum.
5) Change the adjustment data to set the lower peak between green and white to 90 ± 10 mV above the pedestal level.
6) Set the adjustment address to 05 and enter the adjustment data as the value recorded in 1).
7) Change the adjustment address to store the adjustment data in the memory.

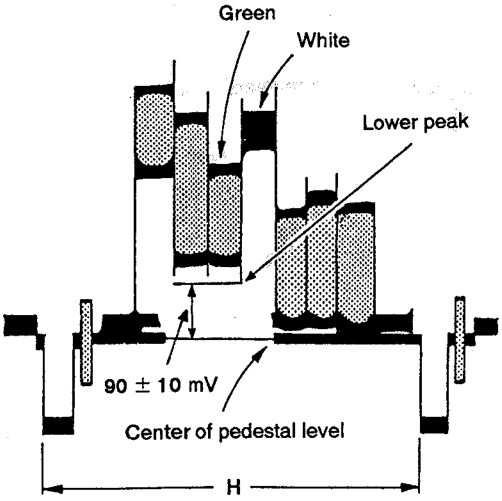


Fig. 7-24.

### 7-2-19. Max. Gain Adjustment (CV-8 Board)

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Filter | ND filters 1.0 (two) and 0.4 (one) |
| Measurement Point | Pin (B8) (VIDEO OUT) of check point array |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 28 (MAX GAIN) |
| Specified Value | 170 ± 10 mV |

Adjustment method:

1) Cover the lens with the ND filter 2.4 (1.0 + 1.0 + 0.4).
2) Set the adjustment address to 28 with the adjustment remote commander.
3) Change the adjustment data with the adjustment remote commander to set the Y signal level to 170 ± 10 mV.
4) Change the adjustment address to store the adjustment data in the memory.

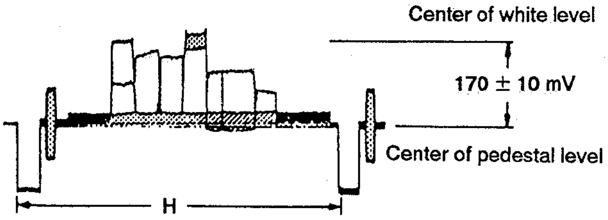


Fig. 7-25.

### 7-2-20. Chroma Level Adjustment (CV-8 Board)

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | Pin A1 (G OUT) of check point array |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 09 (C LEVEL) |
| Specified Value | 400 ± 20 mVp-p |

Connections:

1) Connect Pin B7 (MODE) of the check point array to GND using a jumper wire.

Adjustment method:

1) Set the adjustment address to 09 with the adjustment remote commander.
2) Change the adjustment data with the adjustment remote commander to set the G OUT signal level to 400 ± 20 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

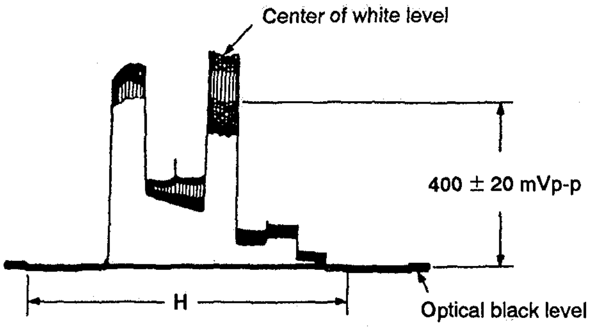


Fig. 7-26.

### 7-2-21. Burst Level Adjustment (CV-8 Board)

| | |
|---|---|
| Subject | All black (cover lens with black cap) |
| Measurement Point | Pin B8 (VIDEO OUT) of check point array |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 22 (BURST LEVEL) |
| Specified Value | 140 ± 5 mVp-p |

Adjustment method:

1) Set the adjustment address to 22 with the adjustment remote commander.
2) Change the adjustment data with the adjustment remote commander to set the burst level to 140 ± 5 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

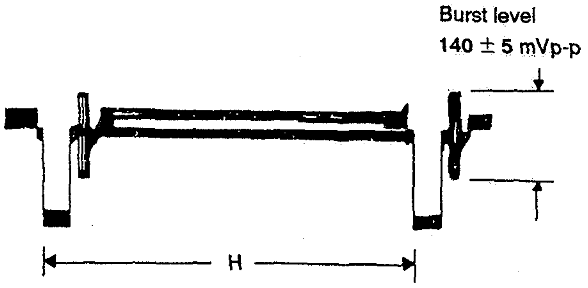


Fig. 7-27.

### 7-2-22. Indoor White Balance Adjustment (Method using vectorscope)

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | Video output terminals |
| Measuring Instrument | Vectorscope |
| Adjustment Address | 11 (R GAIN)<br>12 (B GAIN) |
| Specified Value | The white luminance point is within a circle with a diameter of 1 mm centered around the origin. |

Adjustment method:

1) Set the adjustment address to 11 with the adjustment remote commander.
2) Change the adjustment data with the adjustment remote commander to move the white luminance point to the origin point.
3) Set the adjustment address to 12.
4) Change the adjustment data to move the white luminance point to the origin point.
5) Repeat steps 1) through 4).
6) Change the adjustment address to store the adjustment data in the memory.

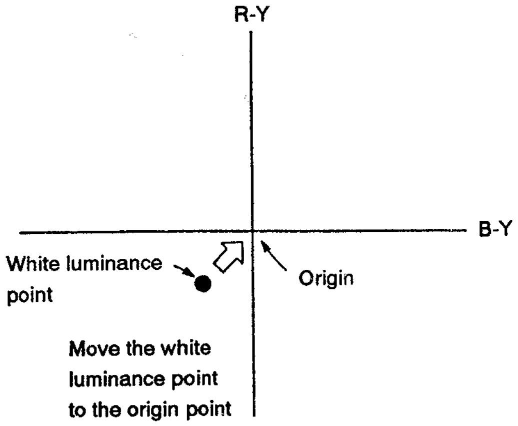

R-Y
B-Y
White luminance point
Origin
Move the white luminance point to the origin point

Fig. 7-28.

### 7-2-23. Indoor White Balance Adjustment (Method using oscilloscope) (CV-8 Board)

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | CH1 (X): collector of Q643 (B-Y)<br>CH2 (Y): collector of Q613 (R-Y) |
| Measuring Instrument | Oscilloscope (X-Y mode) |
| Adjustment Address | 11 (R GAIN)<br>12 (B GAIN) |
| Specified Value | Move the white luminance point to the black luminance point. |

Adjustment method:

1) Set the adjustment address to 11 with the adjustment remote commander.
2) Change the adjustment data with the adjustment remote commander to move the white luminance point with the black luminance point.
3) Set the adjustment address to 12.
4) Change the adjustment data to move the white luminance point to the black luminance point.
5) Repeat steps 1) through 4).
6) Change the adjustment address to store the adjustment data in the memory.

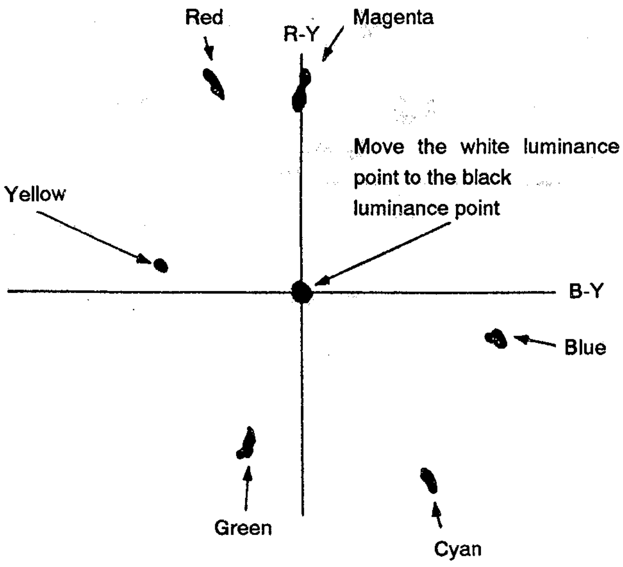

Red
R-Y
Magenta
Move the white luminance point to the black luminance point
Yellow
B-Y
Blue
Green
Cyan

Fig. 7-29.

### 7-2-24. Color Reproduction Adjustment (Method Using Vectorscope)

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | Video output terminals |
| Measuring Instrument | Vectorscope |
| Adjustment Address | 05 (R-Y GAIN)<br>06 (B-Y GAIN)<br>07 (B-Y HUE)<br>08 (R-Y HUE) |
| Specified Value | All color luminance points are within color reproduction frame. |

**Note:** Confirm that Burst Level Adjustment and Indoor White Balance Adjustment have been completed.

Adjustment method:

1) Adjust the phase and gain of the vectorscope to set the burst luminance points to the designated position on the color reproduction frame.
2) Change the adjustment data at the various adjustment addresses using the adjustment remote commander until all color luminance points are within the color reproduction frame.
3) Change the adjustment address to store the adjustment data in the memory.

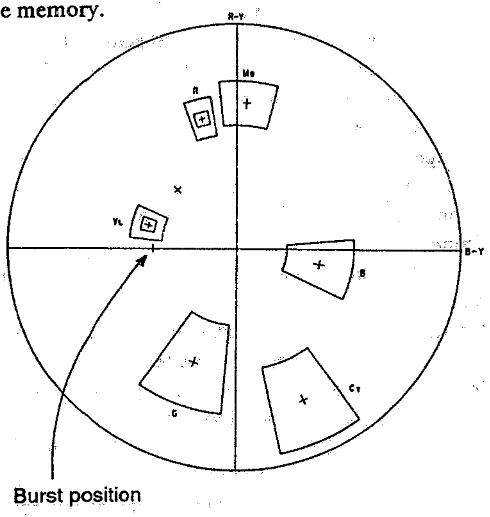


Fig. 7-30.

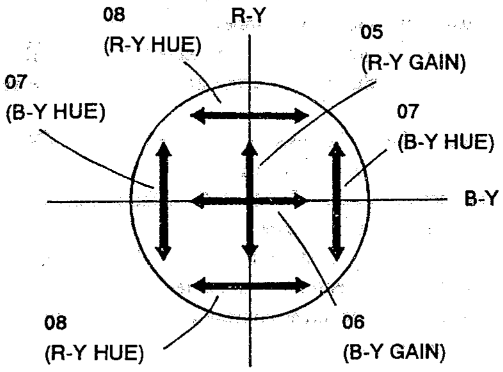


Fig. 7-31. Adjustment Address and Direction of Luminance Point Movement

### 7-2-25. Color Reproduction Adjustment (Method Using Oscilloscope)

#### 1. Gain adjustment (CV-8 board)

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | Pin (B8) (VIDEO OUT) of check point array |
| Measuring Instrument | Oscilloscope |
| Adjustment Address | 05 (R-Y GAIN)<br>06 (B-Y GAIN) |
| Specified Value | Red level: 227 ± 15 mVp-p<br>Yellow level: 151 ± 12 mVp-p |

**Note:** Confirm that Indoor White Balance Adjustment has been completed.

Adjustment method:

1) Set the adjustment address to 06 with the adjustment remote commander and set the adjustment data to B0.
2) Set the adjustment address to 07 and set the adjustment data to B0.
3) Set the adjustment address to 08 and set the adjustment data to B0.
4) Set the adjustment address to 05 and change the adjustment data to set the chroma signal red level to 227 ± 15 mVp-p.
5) Set the adjustment address to 06 and change the adjustment data to set the chroma signal yellow level to 151 ± 12 mVp-p.
6) Repeat steps 4) and 5).
7) Change the adjustment address to store the adjustment data in the memory.
8) Perform Hue Adjustment.

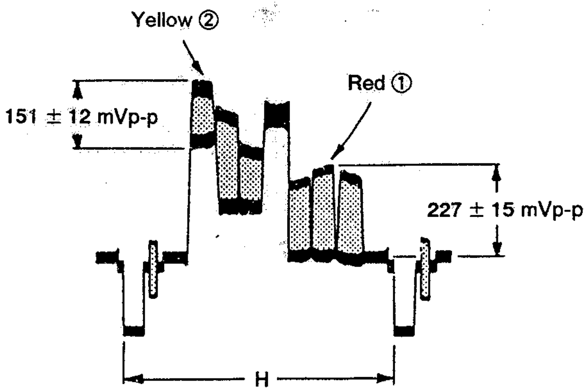


Fig. 7-32.

## 2. Hue adjustment

| | |
|---|---|
| Subject | Color bar chart standard picture frame |
| Measurement Point | CH1 (X): collector of Q643 (B-Y)<br>CH2 (Y): collector of Q613 (R-Y) |
| Measuring Instrument | Oscilloscope (X-Y mode) |
| Adjustment Address | 07 (B-Y HUE)<br>08 (R-Y HUE) |
| Specified Value | Various color luminance points within color reproduction frame. |

**Note:** Make sure that Indoor White Balance Adjustment has been completed.

Adjustment method:

1) Move the black luminance point on the oscilloscope to the origin point of the color reproduction frame.
2) Change the adjustment data at adjustment addresses 07 and 08 with the adjustment remote commander to bring the various color luminance points into the color reproduction frame.
3) Check the hue reproduced on the monitor TV and fine adjust the adjustment data at adjustment addresses 07 and 08 if necessary.
4) Change the adjustment address to store the adjustment data in the memory.

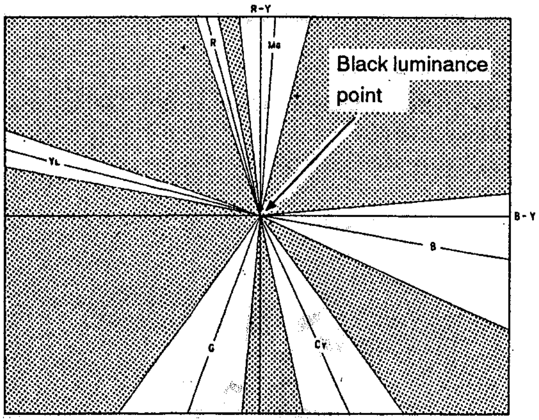


Fig. 7-33.

## 7-2-26. Auto White Balance Adjustment

**Note:** Be sure to first perform Preset Adjustment followed by Auto White Balance Adjustment.

### 1. Preset adjustment (CV-8 Board)

| | |
|---|---|
| Subject | 1. Color bar standard picture frame<br>2. White pattern standard picture frame |
| Measurement Point | Pin (B3) (Y LPF OUT) of check point array |
| Measuring Instrument | Oscilloscope |

**Note:** 1) Perform preset adjustment after supplying power to the unit for at least 30 seconds.
2) When performing preset adjustment again, repeat after first turning the power off and then back on.

Preparations:

1) Prepare a 1 kΩ resistor for connecting Pin (B5) (AWB ADJ) of the check point array and Pin ④ (CAM 5V) of W902.

Adjustment method:

1) Turn the power OFF and then ON.
2) Set the subject to the color bar chart standard picture frame.
3) Select adjustment address 32 (AGC) with the adjustment remote commander and make a note of the adjustment data at this address.
4) Change the adjustment data with the adjustment remote commander to set the signal level to 220 ± 10 mV.
5) Change the subject to the white pattern standard picture frame.
6) Select adjustment address 89 (AWB MODE) and set the adjustment data to E0. Wait at least five seconds.
7) Change the adjustment address to store the adjustment data in the memory. Wait at least five seconds.
8) Remove the jumper wire between Pin (B6) (CAM ADJ) of the check point array and GND.
9) Connect Pin (B5) (AWB ADJ) of the check point array and Pin ④ of W902 (CAM 5V)with a 1 kΩ resistor.
10) Connect Pin (B6) (CAM ADJ) of the check point array to GND using a jumper wire.
Confirm that the indication (adjustment address 01) of the adjustment remote commander is changed.
11) Remove the jumper wire connected to Pin (B6) (CAM ADJ) of the check point array after allowing one second or more to elapse.
12) Remove the 1 kΩ resistor connected to Pin (B5) (AWB ADJ) of the check point array.
13) Connect Pin (B6) (CAM ADJ) of the check point array to GND using a jumper wire.
14) Select adjustment address 32 using the adjustment remote commander and enter the adjustment data recorded in 3).
15) Change the adjustment address to store the adjustment data in the memory.

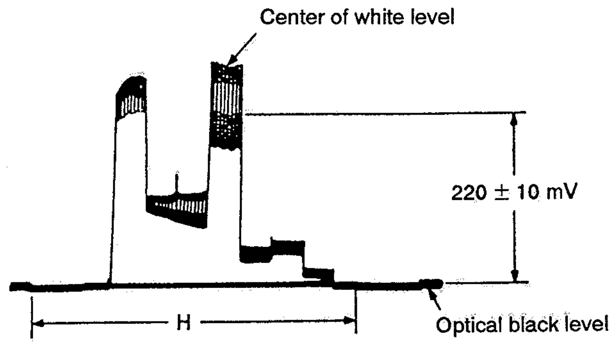


Fig. 7-34.

## 2. Auto White Balance Adjustment (CV-8 Board)

**Note:** Be sure to perform this adjustment after completing Preset Adjustment.

| Subject | White pattern standard picture frame |
|---|---|
| Filter | Filter C14 for black temperature correction |
| Measuring Instrument | Oscilloscope (X–Y Mode) |
| Measurement Point | CH1 (X): collector of Q643 or emitter of Q645 (B-Y)<br>CH2 (Y): collector of Q613 or emitter of Q618 (R-Y) |
| Adjustment Address | 01 (DELTA R)<br>02 (DELTA B)<br>80 (R OUTDOOR)<br>81 (B OUTDOOR)<br>77 (B UP LILIT)<br>79 (B OUT LIMIT)<br>65 (TOP SLP R)<br>66 (MDL SLP R)<br>73 (TOP UP)<br>74 (TOP DWN)<br>78 (R OUT LMT) |
| Specified Value | Line up the white luminance point with the black luminance point. |

**Note:** 1) Make connection to the video output terminals when the vectorscope is used.
2) All calculations in this section are made in decimal.

Adjustment method:

1) Select adjustment address 89 (AWB MODE) with the adjustment remote commander and enter adjustment data of 10.
2) Change the adjustment data of adjustment addresses 01 and 02 with the adjustment remote commander to move the white luminance point and black luminance point.
(Move the white luminance point to pthe origin point when using the vectorscope.)
The adjustment data of adjustment address 01 is $D_1$ and the adjustment data of adjustment address 02 is $D_2$.
3) Select adjustment address 80 and enter adjustment data $D_1+1$. Select adjustment address 81 and enter adjustment data $D_2+3$. (Outdoor white balance adjustment.)
4) Convert adjustment data $D_1$ to decimal to obtain $D_1'$.
Convert adjustment data $D_2$ to decimal to obtain $D_2'$.
(See Table 7-5 Hexadecimal-Decimal Conversion Table)
5) Obtain $D_{77}'$ by the following formula.
$D_{77}'=(D_2' \times 1.9)-43.2$
6) Convert $D_{77}'$ to hexadecimal and call this value $D_{77}$.
(Round off the decimal portion)
7) Select adjustment address 77 with the adjustment remote commander and enter adjustment data $D_{77}$.
Enter adjustment data $D_1$ to adjustment address 78.
8) Obtain $D_{79}'$ by the following formula.
$D_{79}'=D_2'+10$
9) Convert $D_{79}'$ to hexadecimal and call this value $D_{79}$.
10) Select adjustment address 79 with the adjustment remote commander and enter adjustment data $D_{79}$.
11) Obtain d' by the following formula.
$d'=(D_1' \times 5)+D_2'$
The adjustment procedure in 12) through 14) varies according to the value of d'.

### [d' > 308]

12) Obtain $D_{73}'$ and $D_{74}'$ by the following formulas.
$D_{73}'=(D_1' \times 3)+(D_2' \div 2)+30$
$D_{74}'=D_{73}'-42$
13) Convert $D_{73}'$ and $D_{74}'$ to hexadecimal and call these values $D_{73}$ and $D_{74}$.
(Round off the decimal portion)
14) Use the adjustment remote commander to enter the adjustment data shown in the table below for the indicated adjustment addresses.

| Adjustment address | Adjustment data |
|---|---|
| 65 | 20 |
| 66 | 01 |
| 73 | $D_{73}$ |
| 74 | $D_{74}$ |

Perform the adjustment steps beginning from 15).

### [308 ≧ d' ≧ 286]

12) Obtain $D_{73}'$ and $D_{74}'$ by the following formulas.
$D_{73}'=(d' \div 2)+25$
$D_{74}'=D_{73}'-39$
13) Convert $D_{73}'$ and $D_{74}'$ to hexadecimal and call these values $D_{73}$ and $D_{74}$.
(Round off the decimal portion)
14) Use the adjustment remote commander to enter the adjustment data shown in the table below for the indicated adjustment addresses.

| Adjustment address | Adjustment data |
|---|---|
| 65 | 41 |
| 66 | 01 |
| 73 | $D_{73}$ |
| 74 | $D_{74}$ |

Perform the adjustment steps beginning from 15).

### [286 > d']

12) Obtain $D_{73}'$ and $D_{74}'$ by the following formulas.
$D_{73}'=(D_1' \times 3)+D_2'+30$
$D_{74}'=D_{73}'-42$
13) Convert $D_{73}'$ and $D_{74}'$ to hexadecimal and call these values $D_{73}$ and $D_{74}$. (Round off the decimal portion)
14) Use the adjustment remote commander to enter the adjustment data shown in the table below for the indicated adjustment addresses.

| Adjustment address | Adjustment data |
|---|---|
| 65 | 20 |
| 66 | 00 |
| 73 | $D_{73}$ |
| 74 | $D_{74}$ |

15) Select adjustment address 89 and enter adjustment data 00.
16) Select adjustment address 89 and enter adjustment data F0.
17) Change the adjustment data of adjustment addresses 01 and 02 with the adjustment remote commander to move the white luminance point and black luminance point.
(Move the white luminance point to the origin point when using the vectorscope.)
18) Select adjustment address 89 and enter adjustment data of 00.
19) Change the adjustment address to store the adjustment data in the memory.

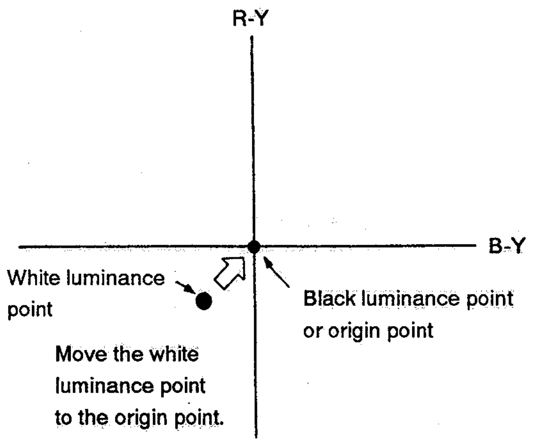

R-Y
B-Y
White luminance point
Black luminance point or origin point
Move the white luminance point to the origin point.

Fig. 7-35.

(Example)
When the adjustment data obtained in Step 2) has the following values.

| Adjustment address | Adjustment data |
|---|---|
| 01 | 2A |
| 02 | 53 |

→ Enter 2A+1 into adjustment address 80
→ Enter into 53+3 adjustment address 81

$D_1$=2A and $D_2$=53 when there is conversion to decimal using Table 7-5.
$D_1'=42$
$D_2'=83$

Thus,
$D_{77}'=(83 \times 1.9)-43.2=114.5$

Rounding off the decimal portion and converting to hexadecimal by Table 7-5 results in,
$D_{77}=72$ → Entered into adjustment address 77
In the same manner,
$D_{79}'=(83+10)=93$
$D_{79}$=5D → Entered into adjustment address 79

In addition,
$d'=(42 \times 5)+83=293$

Thus, [308 ≧ d' ≧ 286]
$D_{73}'=(293 \div 2)+25=171.5$
∴ $D_{73}$=AC → Entered into adjustment address 73
$D_{74}'=171.5-39=132.5$
∴ $D_{74}=85$ → Entered into adjustment address 74

Also, adjustment data of 41 is entered into adjustment address 65, and adjustment data of 01 is entered into adjustment address 66. The steps beginning from 15) are then performed.

### 7-2-27. Outdoor White Balance Confirmation

| | |
|---|---|
| Subject | White pattern standard picture frame |
| Filter | Filter C14 for color temperature correction |
| Measurement Point | When vectorscope used:<br>video output terminals<br>When oscilloscope used:<br>CH1 (X): collector of Q643 (B-Y)<br>CH2 (Y): collector of Q613 (R-Y) |
| Measuring Instrument | |
| Specified Value | See Fig. 7-36. |

Connections:

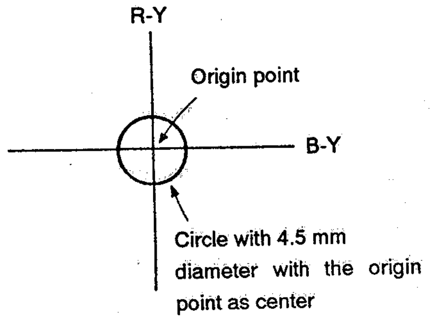
1) Remove the jumper wire connected to Pin (B6) (CAM ADJ) of the check point array. (Turns off the EVR adjustment mode)

Checking method:

1) Press the white balance button to select the outdoor white balance mode. ( ☀ mark is displayed on EVF screen or monitor TV screen (when data screen ON).)
2) Confirm that the center of the white luminance point is within the circle shown in the figure below.

   **Note:** When using a vectorscope, adjust the GAIN and PHASE of the vectorscope so that burst luminance point move to with the burst position of the color reproduction frame.

〔When using vectorscope〕



〔When using oscilloscope〕

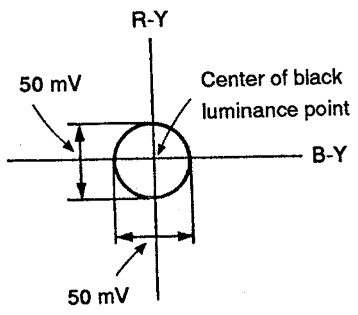


Fig. 7-36.

### 7-2-28. Focus Motor Speed Adjustment (CV-8 Board)

| | |
|---|---|
| Subject | Arbitrary |
| Measurement Point | CN803 |
| Measuring Instrument | AF microcomputer data reading jig |
| Adjustment Address | A26 (FOCUS SPEED) |
| Specified Value | Average value of data indicated on jig=7.0 ± 0.5 |

**Remarks:** The rotation time from the close extreme to far extreme of the focus ring should be approximately 2.1 seconds after completion of adjustment.

Adjustment method:

1) Select adjustment address 37 with the adjustment remote commander and enter adjustment data of 01. (Sets hunching mode)
2) Set the adjustment address to 26.
3) Change the adjustment data so that the indication on the AF microcomputer data reading jig is 07 while the ring is rotating.
4) Press the HOLD button of the AF microcomputer data reading jig while the focus ring is rotating to read the indication value.
5) Repeat step 4) ten times and obtain the average value.
   Specified value=7.0 ± 0.5
   Repeat steps 3) and 4) if the specified value is not satisfied.
6) Set the adjustment address to 37 and set the adjustment data to 00. (Releases hunching mode)
7) Change the adjustment address to store the adjustment data in the memory.

### 7-2-29. Macro Area Adjustment (CV-8 Board)

| | |
|---|---|
| Subject | Arbitrary |
| Measurement Point | CN803 |
| Measuring Instrument | AF microcomputer data reading jig |
| Adjustment Address | 39 (MACRO) |
| Specified Value | (Value at zoom ring WIDE position) −1 |

Adjustment method:

1) Set the zoom ring to the WIDE position (9 mm position).
2) Select adjustment address 37 with the adjustment remote commander and set the adjustment data to 03. (Sets zoom position indication mode)
3) Read the data indicated on the AF microcomputer data reading jig. (Data in the range of 06 to 0E is displayed if normal.)
4) Change the adjustment address to 39.
5) Subtract 1 from the data read from the jig and enter as the adjustment data. (See Table 7-5. Hexadecimal-Decimal Conversion Table)
6) Change the adjustment address to 37 and set the adjustment data to 00. (Releases zoom position indication mode)
7) Change the adjustment address to store the adjustment data in the memory.

### 7-2-30. Auto-Focus LLA Adjustment (CV-8 Board)

| | |
|---|---|
| Subject | All black (cover lens with black cap) |
| Measurement Point | CN803 |
| Measuring Instrument | AF microcomputer data reading jig |
| Adjustment Address | 38 (LLA) |
| Specified Value | (Value indicated on jig) −2 |

Adjustment method:

1) Select adjustment address 37 with the adjustment remote commander and set to 0B as the adjustment data. (Sets auto-focus LLA adjustment mode)
2) Read the data indicated on the AF microcomputer data reading jig and call this value D.
3) Subtract 2 from D and make this value the LLA data. (See Table 7-5. Hexadecimal-Decimal Conversion Table)

   (Example)
   When D=30 (48), LLA data is 2D (46)
   When D=31 (49), LLA data is 2F (47)
   ( ) is decimal equivalent

4) Select adjustment address 38 with the adjustment remote commander and enter the LLA data as the adjustment data.
5) Select adjustment address 37 and set 00 as the adjustment data. (Releases auto-focus LLA adjustment mode)
6) Change the adjustment address to store the adjustment data in the memory.

### 7-2-31. Auto-Focus Adjustment

| | |
|---|---|
| Subject | All black (cover lens with black cap) |
| Measurement Point | CN803 |
| Measuring Instrument | AF microcomputer data reading jig |
| Adjustment Address | 42 (BASE-H) |

Adjustment method:

1) Turn off the auto-focus with the FOCUS button (S655 on CK-8 board).
2) Select adjustment address 37 with the adjustment remote commander and enter adjustment data of FF.
3) Read the indication on the AF microcomputer data reading jig and call this value D.
4) Obtain adjustment data $D_{42}$ according to the following formulas.
   When D=0
   $D_{42}$=03
   When D > 0
   $D_{42}$=D+2 * Hexadecimal calculations
5) Select adjustment address 42 with the adjustment remote commander and enter $D_{42}$ as the adjustment data.
6) Select adjustment address 37 and enter adjustment data of 00.
7) Change the adjustment address to store the adjustment data in the memory.

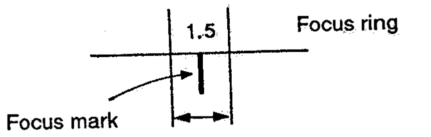
### 7-2-32. Auto-Focus Confirmation

| | |
|---|---|
| Subject | Siemens star (position 1.5m from the front of the lens reference plane ("Φ" mark) |

**Note:** Perform adjustment with the EVF (electronic viewfinder) attached.

Measuring method:

1) Place the Siemens star 1.5m from the front of the lens reference surface (See Fig. 7-2.).
2) Set the zoom lever to the TELE position (54 mm) and turn on auto focus with the FOCUS button.
3) Adjust the direction of the camera so that center of the Siemens star is lined up with the center of the monitor screen on the monitor TV screen.
4) To open the iris, reduce the illumination of the Siemens star to the range in which the ■ mark in the upper center of the EVF screen does not light up.
   (Or cover lens with the ND filter)
5) Turn off the auto-focus with the FOCUS button.
6) Manually rotate the focus ring to set the focus. Confirm that the focus mark is inside the range shown in Fig. 7-37 at this time.
   Perform Flange Back Adjustment if this condition is not satisfied.
7) Rotate the focus ring to the close extreme (1.1m).
8) Turn on the auto-focus with the FOCUS button.
9) Confirm that there is focusing within two seconds and a sharp image can be obtained.
10) Turn off the auto-focus and rotate the focus to the far extreme ( ∞ ).
11) Turn on the auto-focus.
12) Confirm that there is focusing within two seconds and a sharp image can be obtained.



Confirm that focus mark is within this range

Fig. 7-37.

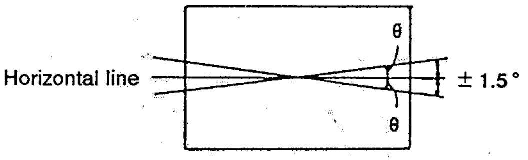
## 7-3. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT

### 7-3-1. Horizontal Tilt Adjustment

| Mode | Playback |
|---|---|
| Signal | Alignment tape for checking operation (WR5-5NSP)<br>Monoscope portion |
| Specified Value | See Fig. 7-38. |

Adjustment method:

1) By turning RV904 (BRIGHT), adjust for a luminance level which provides appropriate visibility of the CRT screen.
2) Loosen the DY (deflection yoke) tightening nut.
3) Make the image horizontal by rotating DY.
4) Retighten the DY tightening nut. (Do not tighten excessively.)


Horizontal line
θ
θ
± 1.5 °

Specified value: Image orientation within ± 1.5 ° of horizontal line.

Fig. 7-38.

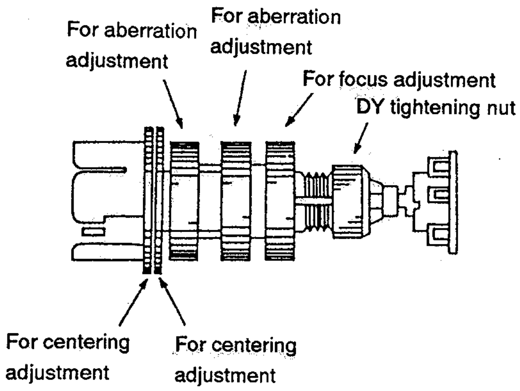

For aberration adjustment
For aberration adjustment
For focus adjustment
DY tightening nut
For centering adjustment
For centering adjustment

Fig. 7-39.

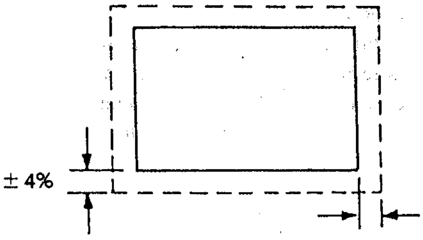
### 7-3-2. Centering Adjustment

| Mode | Playback |
|---|---|
| Signal | Alignment tape for checking operation (WR5-5NSP)<br>Monoscope portion |
| Specified Value | See Fig. 7-40. |

Adjustment method:

1) Turn the centering adjustment rings to provide an image with even right, left, upper and lower margins. (See Fig. 7-40.)

**Note:** Since the centering position is affected by the earth magnetism, turn the equipment over 360 ° horizontally, and make adjustments at the orientation which exhibits median displacements of the image.



Adjusted value: ± 4%

Fig. 7-40.

### 7-3-3. Focus Adjustment

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape for checking operation (WR5-5NSP)<br>Monoscope portion |

Adjustment method:

1) Adjust for optimum focus using the focus ring. (See Fig. 7-39.)

### 7-3-4. Aberration Adjustment

| | |
|---|---|
| Mode | E-E |
| Signal | Dot pattern |
| Specified Value | See Fig. 7-41. |

Adjustment method:

1) Use the aberration adjustment rings to adjust any trailing dots to within 2 times the dot diameter and any fan shaped aberrations to within the dot diameter.
2) If off center, repeat the Centering Adjustment.

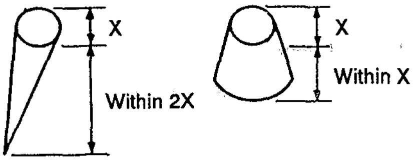


Fig. 7-41.

### 7-3-5. Horizontal Oscillation Frequency Adjustment (VF-14 Board)

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape for checking operation (WR5-5NSP) |
| Measurement Point | Positive terminal of C904 |
| Measuring Instrument | Digital voltmeter or oscilloscope (DC range) |
| Adjustment Element | RV901 |
| Specified Value | 2.60 ± 0.05 Vdc |

Adjustment method:

1) Adjust to 2.60 ± 0.05 Vdc using RV901.

### 7-3-6. Horizontal Amplitude Adjustment (VF-14 Board)

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape for checking operation (WR5-5NSP)<br>Monoscope portion |
| Adjustment Element | C911 |
| Specified Value | 6 ± 3% |

Adjustment method:

1) Line up the upper and lower sections of the monoscope image with the upper and lower edges of the screen by rotating RV902.
2) Rotate RV904 to set the brightness to the normal level.
3) Short or open the pattern (A) of the H size adjustment capacitor (C911) to provide horizontal overscans of 6 ± 3% (total of left and right). (See Fig. 7-48.)

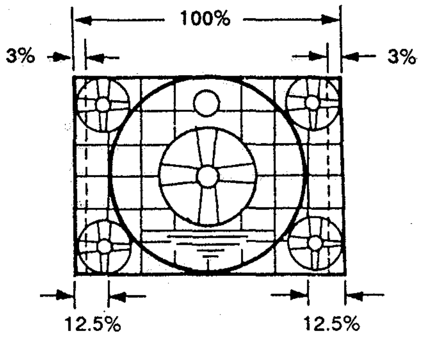
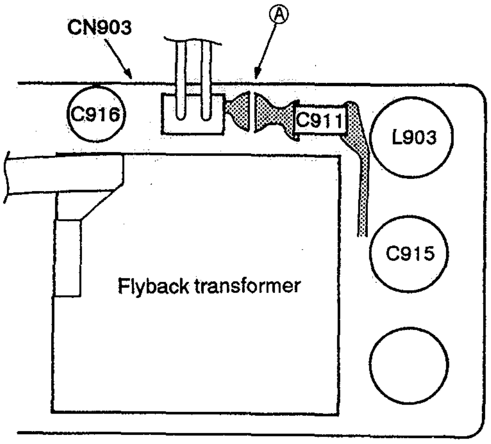


Fig. 7-42.



VF-14 Board (component side)

| A section | H size |
|---|---|
| Open | Large |
| Short | Small |

Fig. 7-43.

### 7-3-7. Vertical Amplitude Adjustment (VF-14 Board)

| Mode | Playback |
|---|---|
| Signal | Alignment tape for checking operation (WR5-5NSP)<br>Monoscope portion |
| Adjustment Element | RV902 |
| Specified Value | 6 ± 3% |

Adjustment method:

1) By turning RV902, adjust vertical overscan to 6 ± 3% (upper and lower total).

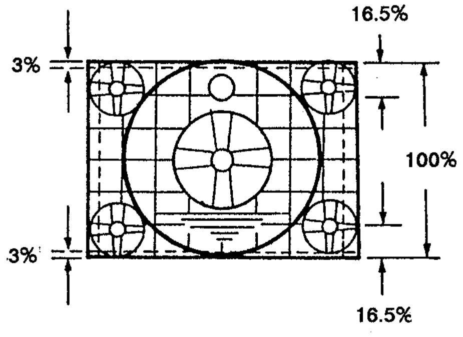

16.5%
3%
100%
3%
16.5%

Fig. 7-44.

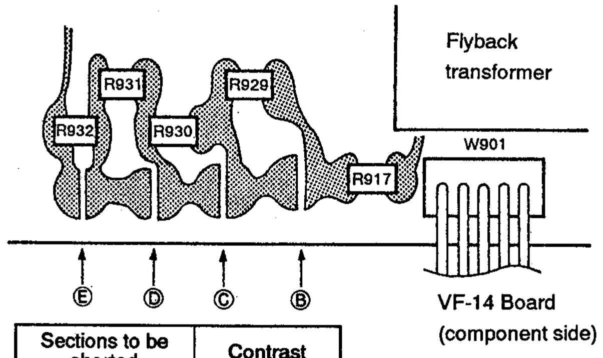
### 7-3-8. Brightness, Contrast Adjustments (VF-14 Board)

| Mode | Playback |
|---|---|
| Signal | Alignment tape for checking operation (WR5-5NSP)<br>Monoscope portion |
| Adjustment Element | Brightness: RV904<br>Contrast: see Fig. 7-45. |

Adjustment method:

1) Perform brightness and contrast adjustments alternately until the bright and dark areas of a gray scale are displayed correctly. (The bright areas should not be made too bright to avoid a fuzzy display of the cross-hatches in the monoscope circle, and the brightness of the dark areas should be such that discrimination between the darkest and second darkest area is possible.)

Use sections Ⓑ to Ⓔ of VF-14 board to open and short for contrast adjustment.


Flyback transformer
R931
R929
R932
R930
R917
W901
Ⓔ
Ⓓ
Ⓒ
Ⓑ
VF-14 Board (component side)

| Sections to be shorted | Contrast |
|---|---|
| Ⓓ and Ⓔ | High |
| Ⓔ | ↑ |
| Ⓓ | │ |
| All open | │ |
| Ⓒ | │ |
| Ⓑ | ↓ |
| Ⓑ and Ⓒ | Low |

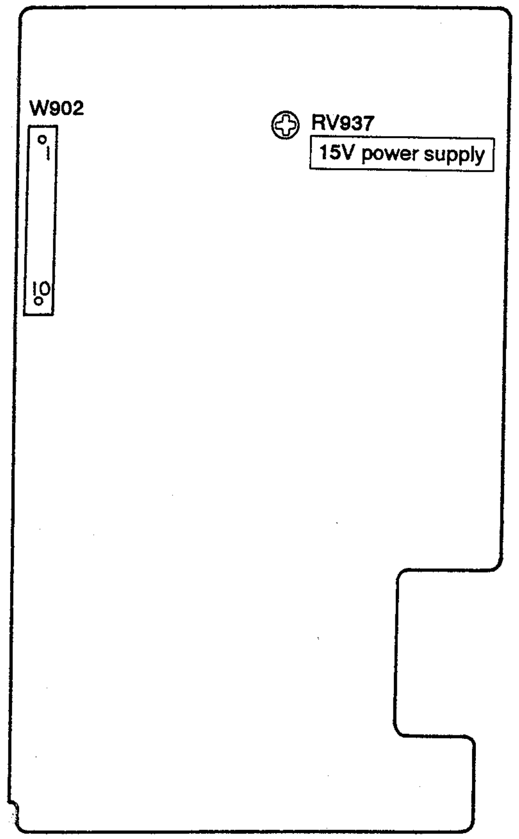
Fig. 7-45.

### 7-3-9. Horizontal Amplitude, Vertical Amplitude and Focus Checks

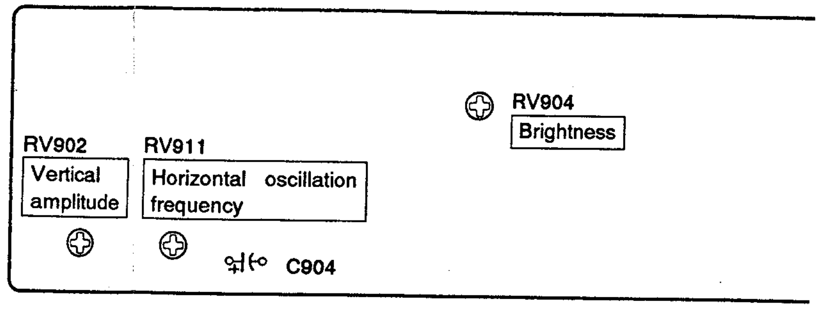
Values should conform to specifications given in 7-3-6. Horizontal Amplitude Adjustment and 7-3-7. Vertical Amplitude Adjustment. If not, readjust accordingly, and repeat 7-3-8. Brightness, Contrast Adjustments. In this case, focus needs to be checked. If the image is not clear, perform 7-3-3. Focus Adjustment and 7-3-4. Aberration Adjustment.

## 7-4. ADJUSTMENT ELEMENTS LOCATION

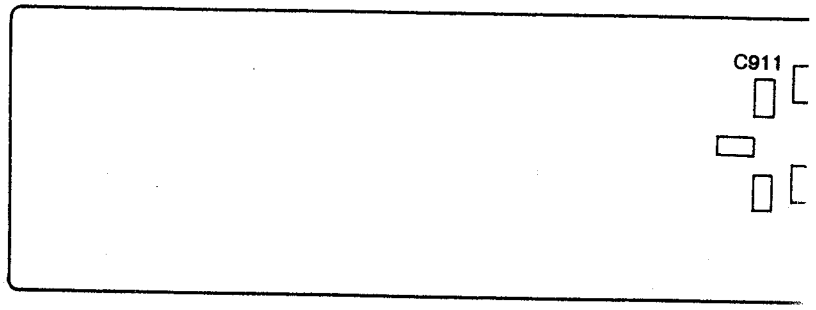
### PS-180 BOARD (COMPONENT SIDE)


W902
1
10
RV937
15V power supply

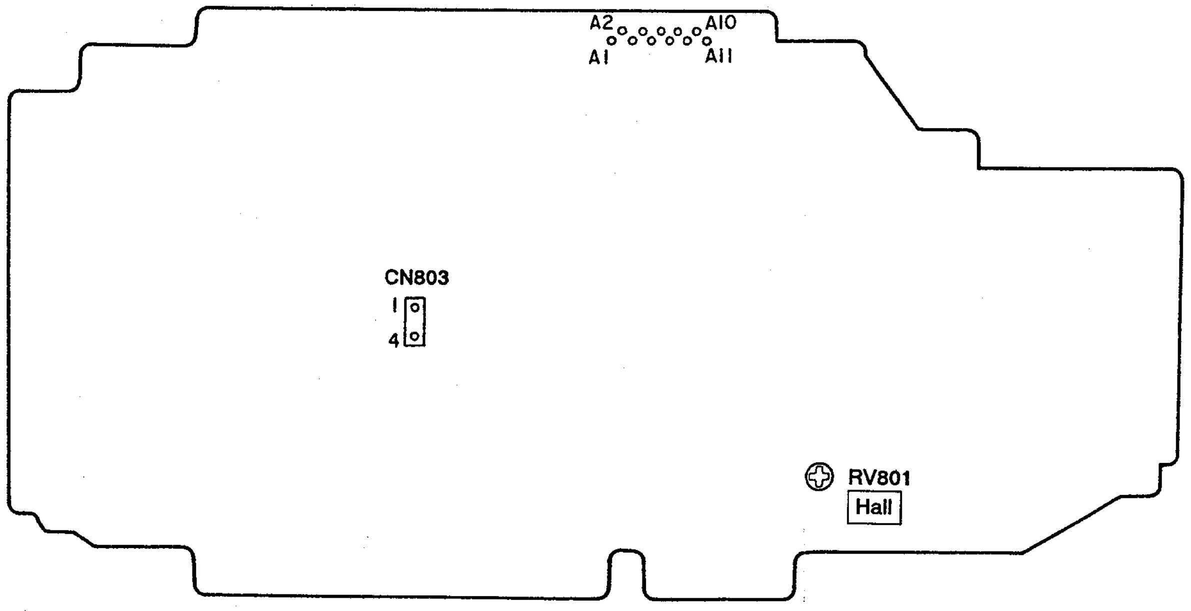
### VF-14 BOARD (COMPONENT SIDE)


RV904
Brightness
RV902
Vertical amplitude
RV911
Horizontal oscillation frequency
C904

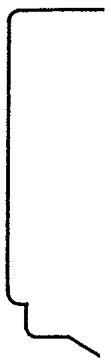
### VF-14 BOARD (CONDUCTOR SIDE)



### CV-8 BOARD (COMPONENT SIDE)

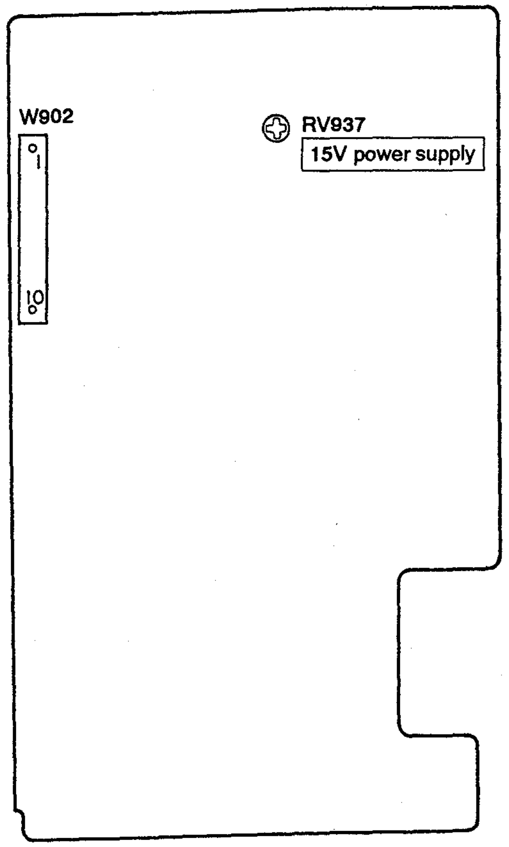

A2
A10
A1
A11
CN803
1
4
RV801
Hall

### CV-8 B

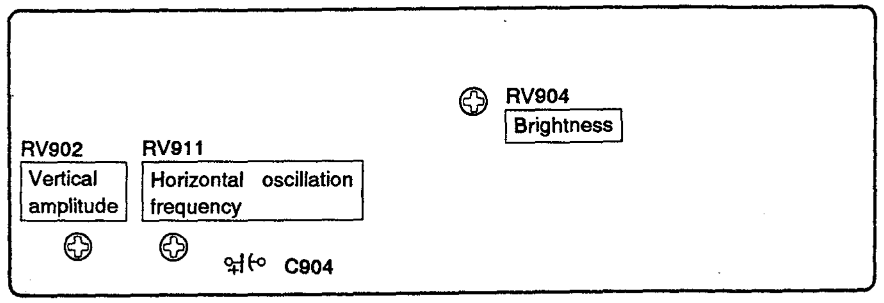


## 7-4. ADJUSTMENT ELEMENTS LOCATION

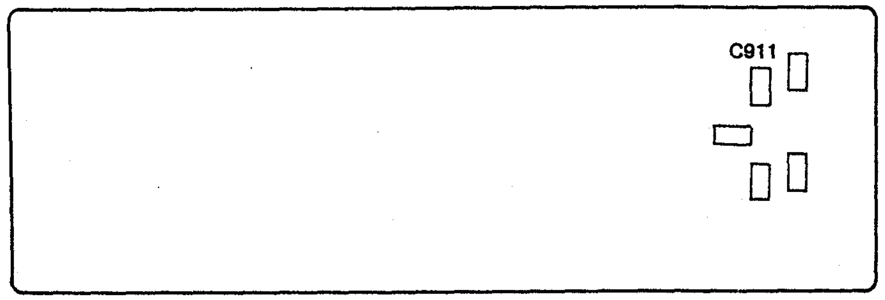
### PS-180 BOARD (COMPONENT SIDE)


W902
1
10
RV937
15V power supply

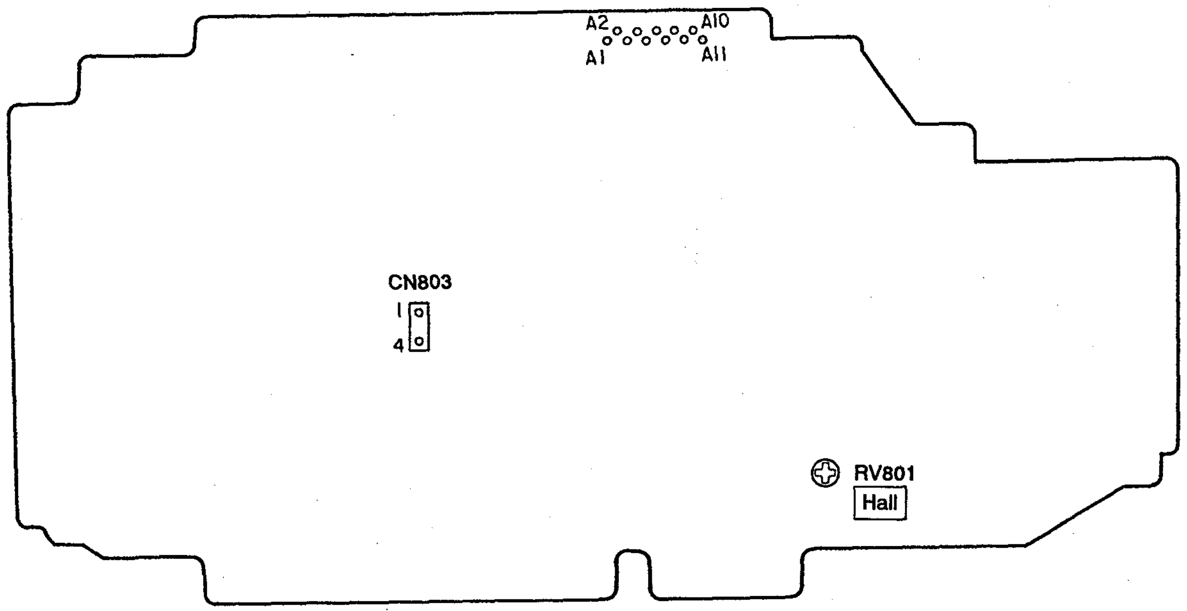
### VF-14 BOARD (COMPONENT SIDE)


RV904
Brightness
RV902
Vertical amplitude
RV911
Horizontal oscillation frequency
C904

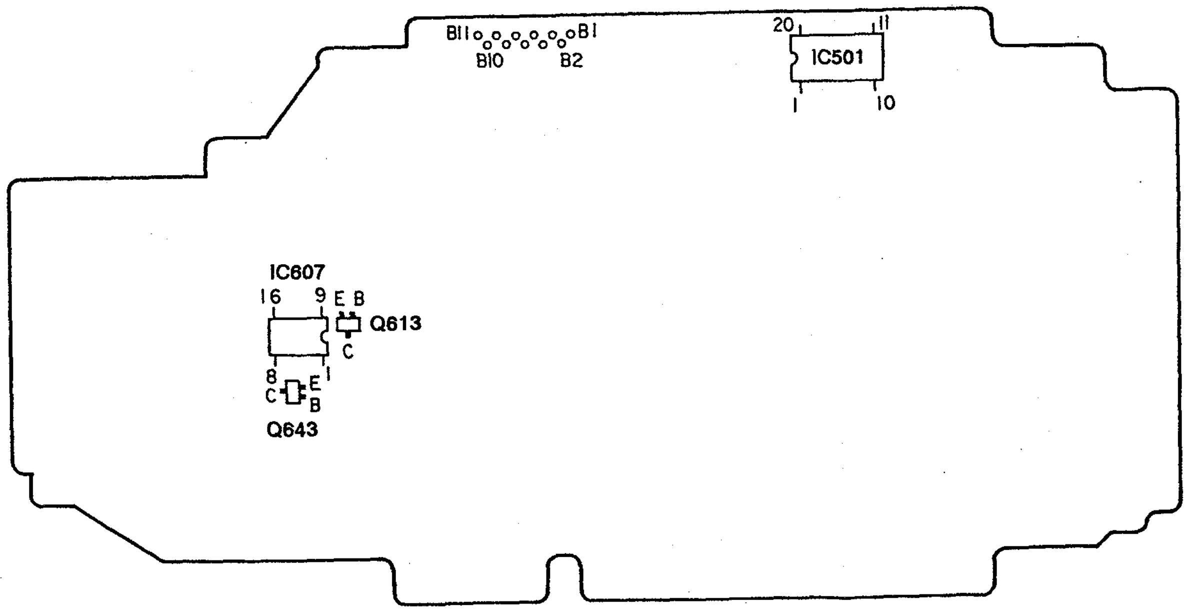
### VF-14 BOARD (CONDUCTOR SIDE)



### CV-8 BOARD (COMPONENT SIDE)


A2
A10
A1
A11
CN803
1
4
RV801
Hall

### CV-8 BOARD (CONDUCTOR SIDE)


B11
B1
B10
B2
20
11
IC501
1
10
IC607
16
9
E B
Q613
C
8
1
C
E
B
Q643

# SECTION 8
# MECHANISM BLOCK ADJUSTMENTS

## Mechanism Block Adjustments

Refer to the separate "8mm Video Mechanical Adjustment Manual III U Mechanism" for adjustment and checking of the mechanism block and for replacement of mechanical parts.
Refer to the following for setting of track shift mode.

## 8-1. TRACK SHIFT MODE SETTING

**[Setting method]**

- Connect the TEST A terminal and TEST B terminal to the COM terminal. Connect Pin ① and Pin ③ of CN508 on the VK-1 board to Pin ②. (See Fig. 8-1.)

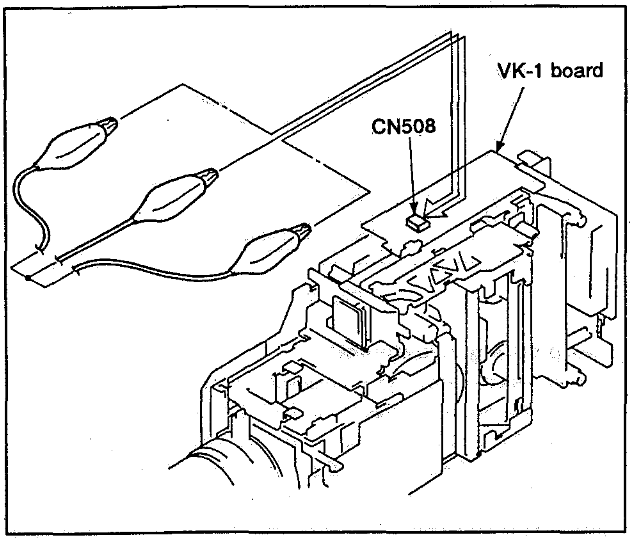

VK-1 board
CN508

Fig. 8-1.

## 8-2. PREPARATION FOR ADJUSTMENT

1) Perform cleaning of the tape running surface (tape guides, drums, capstan shafts, and pinch rollers).
2) Connection of oscilloscope
   CH 1: RF signal output (V RF OUT) of drum head
   Pin ③ (V RF OUT) of CN102 on the CO-2 board
   External trigger: External trigger output (RF SW.P)
   Pin ④ of CN102 on the CO-2 board.
3) Play back the alignment tape (WR5-1N, Ref No. J-5) for tracking.
4) Confirm that the RF waveform on oscilloscope at both entrance and exit sides is flat. (See Fig. 8-3.)
   Perform the adjustment described below if not flat.

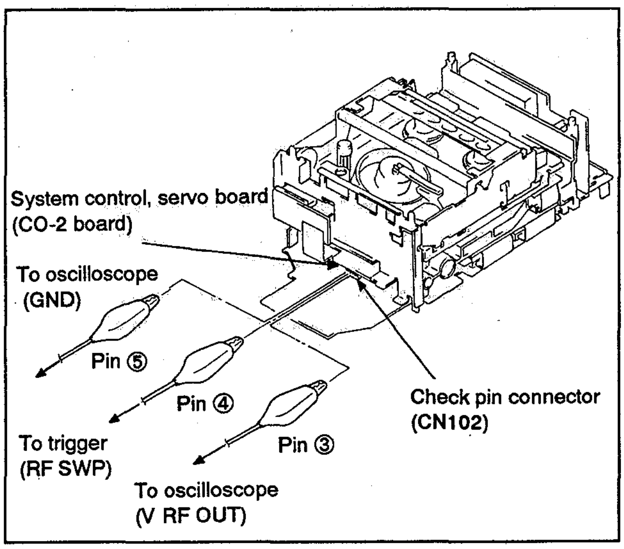

System control, servo board
(CO-2 board)
To oscilloscope
(GND)
Pin ⑤
Pin ④
To trigger
(RF SWP)
Pin ③
To oscilloscope
(V RF OUT)
Check pin connector
(CN102)

Fig. 8-2.

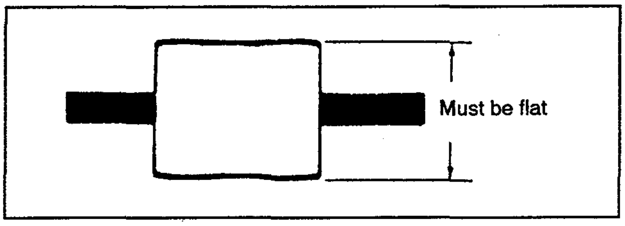

Must be flat

Fig. 8-3.

# SECTION 9

# VIDEO BLOCK ADJUSTMENTS

**During the adjustments, see the adjustment element location to the adjustment from page 246.**

Use the following measuring instruments for adjustment of the VTR block.

### [Equipment to be used]

1) Monitor TV
2) Dual trace oscilloscope of over 10 MHz band, incorporates delay mode. (Use 10 : 1 probe unless otherwise specified)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuator
10) Regulated power supply
11) Alignment tapes
    Tracking adjustment (WR5-1N)
    Parts Code: 8-967-995-01
    Video frequency characteristics adjustment (WR5-6N)*1
    Parts Code: 8-967-995-12
    Operation check (WR5-4NL)*2
    Parts Code: 8-967-995-51
    (WR5-5NSP)*3
    Parts Code: 8-967-995-42

    **Note:**
    *1 WR5-2N (8-967-995-11) is also available.
    *2 WR5-3NL (8-967-995-31) is also available.
    *3 WR5-3NSP (8-967-995-22) and
    WR5-4NSP (8-967-995-41) are also available.
12) Adjustment remote commander (Modification of RM-95)

### [Connection of equipment]

Unless otherwise specified, adjustment is made with the measuring instrument connected as shown in the diagram below.

- Camera/video power switch......Video position

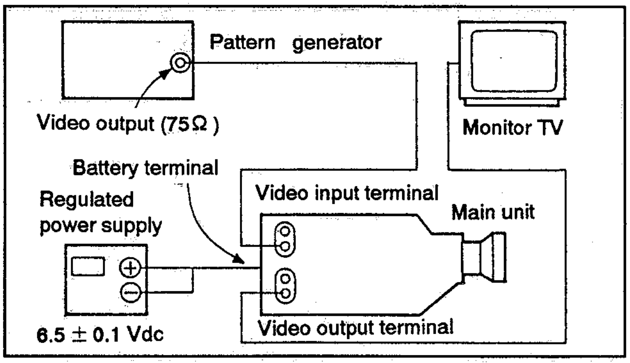

Pattern generator
Video output (75Ω)
Monitor TV
Battery terminal
Regulated power supply
Video input terminal
Main unit
6.5 ± 0.1 Vdc
Video output terminal

Fig. 9-1.

### [Set-up during adjustment]

Since the video output signal obtained from the pattern generator is used as the adjusting signal for the VTR block, it is necessary that this video output signal be within the required specifications. Connect an oscilloscope to J202 (video input terminal) on the CV-8 board and make sure that the amplitude of the video SYNC signal is approximately 0.3V, that the video block amplitude is approximately 0.7V, that the burst signal amplitude is approximately 0.3V with flat characteristics, and the signal level ratio between the burst signal and "Red" signal is 0.30 : 0.66. The video signal (color bars) used for VTR block electrical adjustment are shown in Fig. 9-2.

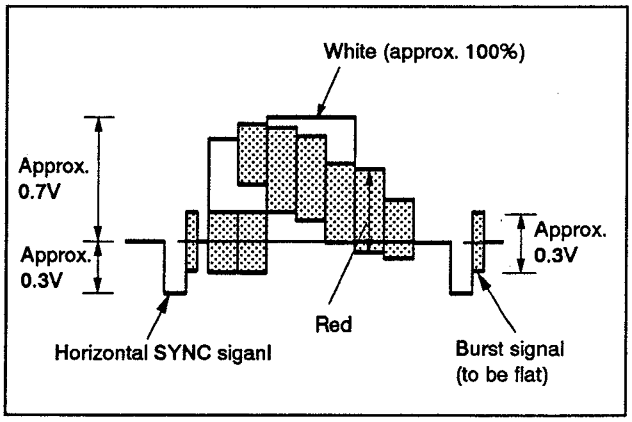
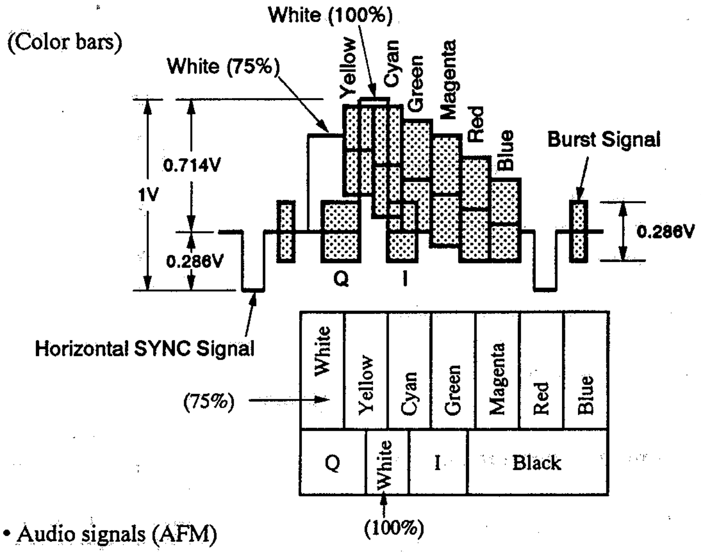

White (approx. 100%)
Approx. 0.7V
Approx. 0.3V
Approx. 0.3V
Red
Horizontal SYNC siganl
Burst signal (to be flat)

Fig. 9-2. Color bar signal of pattern generator

## [Alignment tapes]

| Tape | Content | Use |
|---|---|---|
| Tracking<br>(WR5-1N) | 1. Recording area: PCM – video<br>2. Recording content: CH2: 1 MHz linearity adjustment signal<br>(CH1: 9 MHz) | Drum linearity adjustment |
| Video Frequency Response<br>(WR5-6N) | 1. Recording area: Video<br>2. Recording content: RF sweep 0 to 10 MHz<br>3. Maker: 1, 3.58, 5.5 and 7 MHz | Frequency response adjustment |
| Operation Check<br><br>SP mode<br>(WR5-5NSP)<br>LP mode<br>(WR5-4NL)<br><br>Note:<br>PCM area is not included in WR5-4NL | 1. Recording area: Video<br>2. Recording content:<br>■ Video area<br>• Video signals Color bars 4 minutes<br>Monoscope 4 minutes<br>(Color bars)<br> White (100%)<br>White (75%)<br>Yellow<br>Cyan<br>Green<br>Magenta<br>Red<br>Blue<br>Burst Signal<br>0.714V<br>1V<br>0.286V<br>0.286V<br>Q<br>I<br>Horizontal SYNC Signal<br>(75%)<br>White<br>Yellow<br>Cyan<br>Green<br>Magenta<br>Red<br>Blue<br>Q<br>White<br>I<br>Black<br>(100%)<br>• Audio signals (AFM)<br>400 Hz 60% modulation<br>■ PCM area<br>• Audio signals (PCM)<br>1 kHz 4 minutes Color bar<br>20 Hz 2 sec<br>400 Hz 4 sec } Iterative Monoscope<br>14 kHz 2 sec | Operation check |

## [I/O level and impedance]

| | |
|---|---|
| Video input | Pin jack<br>Input signal: 1 Vp-p, 75 Ω unbalanced, negative sync |
| Video output | Pin jack<br>Output signal: 1 Vp-p, 75 Ω unbalanced, negative sync |
| Audio input | Pin jack<br>Input level: –7.5 dBs (0 dBs=0.775 Vrms)<br>Input impedance: More than 47 kΩ |
| Audio output | Pin jack<br>Specified output: –7.5 dBs<br>Output impedance: More than 2.2 kΩ |

## [Service modes]

This unit is equipped with service modes for adjustment and operation checking.
There are the following two service modes and switching between them is by connection between GND and Pin (B6) of the check point array on the CV-8 board.

| Service Mode | Function | Connection between GND and Pin (B6) of the check point array (CV-8 board) |
|---|---|---|
| Status indication mode | For video block adjustment, operation checking | Open<br>(no connection) |
| EVR adjustment mode | For adjustment of camera block | Shorted |

Refer to Camera Block Adjustment for details on the EVR adjustment mode.

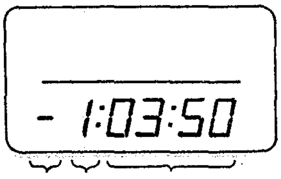
### 1. Invoking service mode

1) Connect the adjustment remote controller to the remote terminal (J951 on RC-26 board) of the main unit.
2) Set the HOLD switch of the adjustment remote commander to the HOLD position (SERVICE position).

The status indication mode is invoked by the above operation. (To select the EVR adjustment mode, connection between Pin (B6) of the check point array and GND is required.)

### 2. Indication on adjustment remote controller LCD in status indication mode

**Note:** In categories 1 through 4, the same information is displayed in the EVF screen and on the monitor screen (when the data screen is ON).



①...... Minus segment flashes to indicate that the service mode has been invoked.
②...... Indicates service mode category.
③...... Indicates battery voltage, LAST EMG, PRESET EMG, or MODE SW CODE according to current category.

### 3. Category selection and indication in each category

Select the desired category with the FF or REW button of the adjustment remote controller. There are four categories (1 through 4) and the indications are different for each. (Note that category 0 is the EVR adjustment mode.)

<table>
<tr><th>Caategory</th><th>Indication on LCD</th></tr>
<tr><td>1</td><td>A/D conversion value for battery voltage<br>(decimal indication)[*1]<br>00 : 00 – 02 : 55</td></tr>
<tr><td>2</td><td>LAST EMG (last emergency)[*2]<br>Refer to Service Mode Error Indications.</td></tr>
<tr><td>3</td><td>PRESENT EMG (current emergency)[*3]<br>Refer to Service Mode Error Indications.</td></tr>
<tr><td>4</td><td>MODE SW CODE (mechanism status)
<table>
<tr><td>00 : 00</td><td>EJECT</td></tr>
<tr><td>00 : 01</td><td>I.A</td></tr>
<tr><td>00 : 02</td><td>UNLOAD</td></tr>
<tr><td>00 : 03</td><td>I.B</td></tr>
<tr><td>00 : 04</td><td>STOP (threading completed)</td></tr>
<tr><td>00 : 05</td><td>I.C</td></tr>
<tr><td>00 : 06</td><td>RP(REC, PB, FF, REW, CUE, REVIEW, PAUSE)</td></tr>
<tr><td>00 : AA</td><td>Mode switch error</td></tr>
</table></td></tr>
</table>

**Notes:**
1) Indicates a value proportional to the battery voltage.
2) LAST EMG indicates the error occurring last before entering service mode. Even if an error occurs in the service mode, it is not indicated.
3) PRESENT EMG indicates the status when the FF or REW button of the adjustment remote controller was pressed. So, the indication does not change even if the error is eliminated.

### • Service mode error indication

| Error Status | PRESENT EMG Indication LAST EMG | Indication |
|---|---|---|
| No error | 00 : 00 | 00 : 00 |
| Loading motor | 00 : 01 | 00 : 01 |
| REEL FG error during unthreading | 00 : 02 | 00 : 02 |
| REEL FG error not during unthreading | 00 : 03 | 00 : 03 |
| Capstan error | 00 : 04 | 00 : 04 |
| DRUM PG error (0) when starting drum | 00 : 05 | 00 : 05 |
| DRUM PG error (1) when starting drum | 01 : 05 | 00 : 14<br>or 00 : 0E |
| DRUM PG error (2) when starting drum | 02 : 05 | 00 : 15<br>or 00 : 0F |
| No DRUM PG (0) when starting drum | 00 : 06 | 00 : 06 |
| No DRUM PG (1) when starting drum | 01 : 06 | 00 : 14<br>or 00 : 0E |
| No DRUM PG (2) when starting drum | 02 : 06 | 00 : 15<br>or 00 : 0F |
| DRUM FG error (0) when drum stationary | 00 : 07 | 00 : 07 |
| DRUM FG error (1) when drum stationary | 01 : 07 | 00 : 14<br>or 00 : 0E |
| DRUM FG error (2) when drum stationary | 02 : 07 | 00 : 15<br>or 00 : 0F |
| No DRUM PG (0) when drum stationary | 00 : 08 | 00 : 08 |
| No DRUM PG (1) when drum stationary | 01 : 08 | 00 : 14<br>or 00 : 0E |
| No DRUM PG (2) when drum stationary | 02 : 08 | 00 : 15<br>or 00 : 0F |
| Phase error (0) when drum stationary | 00 : 09 | 00 : 09 |

(1) During tape threading
(2) During tape unthreading
(0) Other

### 4. Releasing service mode

The service mode is released by returning the HOLD switch of the adjustment remote controller to the NORMAL position or by disconnecting the adjustment remote controller from the remote terminal.

**[Test modes]**

This unit has three test modes which are invoked by connecting the terminals of CN508 on the VK-1 board.

| Test Mode | Connection of CN508 on VK-1 Board | Function |
|---|---|---|
| 1 | Pin ③ (TEST A) and Pin ② (GND) short-circuited | 1. Switching position adjustment possible.<br>2. Error detection disabled. |
| 2 | Pin ① (TEST B) and Pin ② (GND) short-circuited | 1. For battery end detection adjustment<br>BATTERY SENSE voltage (input voltage to Pin ㊽ of IC501) is displayed in EVF and monitor screen (only when data screen is ON).<br>− 1 : 03 : 05<br>Mode indication ↑ BATTERY SENSE voltage ↑ |
| 3 | Pin ③ (TEST A) and Pin ② (GND)/Pin ① (TEST B) and Pin ② short-circuited. | 1. For tape path adjustment (Tracking shifted by 1/4 track)<br>Refer to MECHANISM ADJUSTMENTS. |

## 9-1. POWER SUPPLY ADJUSTMENTS AND CHECKS

### 9-1-1. Oscillation Frequency Adjustment (PS-180 Board)

| | |
|---|---|
| Mode | Stop (POWER ON) |
| Measurement Point | Collector of Q941 |
| Measuring Instrument | Frequency counter |
| Adjustment Element | RV938 |
| Specified Value | 475 ± 5 kHz |

Adjustment method:
1) Adjust the oscillation frequency to 475 ± 5 kHz with RV938.

### 9-1-2. Video 5V Adjustment (PS-180 Board)

| | |
|---|---|
| Mode | Stop (POWER ON) |
| Measurement Point | Pin ① of W901 |
| Measuring Instrument | Digital voltmeter |
| Adjustment Element | RV936 |
| Specified Value | 5.10 ± 0.05 Vdc |

Adjustment method:
1) Adjust with RV936 so that it becomes 5.10 ± 0.05 Vdc.

## 9-2. SYSTEM CONTROL ADJUSTMENTS

### 9-2-1. Battery Down Adjustment (CO-2 Board)

| | |
|---|---|
| Mode | Recording |
| Signal | Arbitrary |
| Measurement Point | Confirmation on monitor screen |
| Measuring Instrument | |
| Adjustment Element | RV551 |
| Specified Value | Battery indication (🔋) flashes at 0.8s cycle and counter value is approximately "–1 : 02 : 85". |

Connections:

1) Connect a regulated power supply and digital voltmeter as shown in Fig. 9-3.
2) Connect Pin ① (TEST B) and Pin ② (GND) of CN508 on the VK-1 board with a jumper wire. (Test 2 mode)

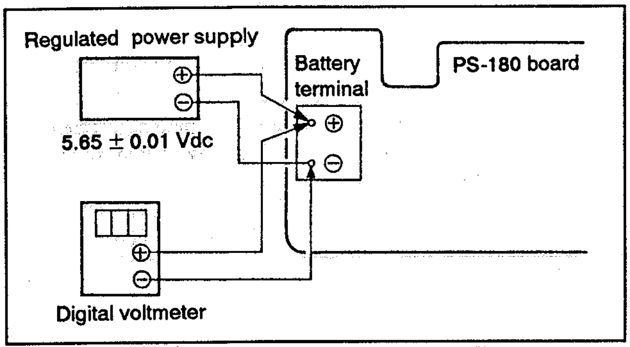


Fig. 9-3.

Adjustment method:

1) Press the data screen button (S509) on the VK-1 board to display the counter on the monitor screen. (See Fig. 9-4.)
2) Confirm that the indication on the digital voltmeter is 5.65 ± 0.01 Vdc.
3) Slowly rotate RV551 and set to the closest point at which the battery indication (🔋) on the monitor screen flashes at a cycle of 0.8 seconds and the counter value is "–1 : 02 : 85".

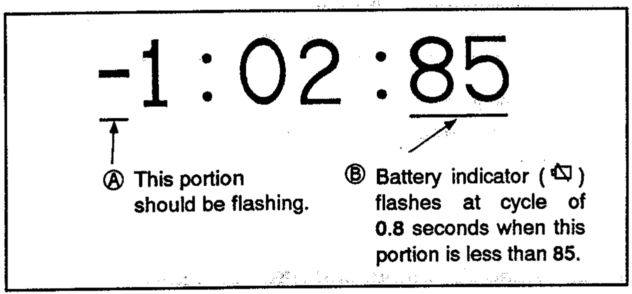

-1 : 02 : 85
Ⓐ This portion should be flashing.
Ⓑ Battery indicator (🔋) flashes at cycle of 0.8 seconds when this portion is less than 85.

Fig. 9-4.

Checking method:

Perform the following checks and repeat the adjustments again if the required conditions are not satisfied.

1) Adjust the output voltage of the regulated power supply so that the indication of the digital voltmeter becomes 5.80 ± 0.01 Vdc.
2) Set the unit to the camera REC mode after turning the power off and then on.
3) Press the data screen button on the VK-1 board so that there is data indication on the monitor screen.
4) Confirm that the battery indicator (🔋) is not lit up on the monitor screen.
5) Slowly lower the output voltage of the regulated power supply until the indication on the digital voltmeter becomes 5.50 ± 0.01 Vdc.
6) Confirm that the battery indicator (🔋) is flashing on the monitor screen at a cycle of 0.8 seconds.

### 9-2-2. System Clock Adjustment (CK-8 Board)

| | |
|---|---|
| Mode | Power ON |
| Measurement Point | Pin ⑱ of IC651 |
| Measuring Instrument | Frequency counter |
| Adjustment Element | RV651 |
| Specified Value | 330 ± 5 kHz |

Adjustment method:

1) Adjust with RV651 so that it becomes 330 ± 5 kHz.

### 9-2-3. Clock Precision Adjustment (CK-8 Board)

| | |
|---|---|
| Mode | Power OFF |
| Measurement Point | Pin ㊶ of IC651 |
| Measuring Instrument | Frequency Counter |
| Adjustment Element | CV651 |
| Specified Value | 8192.00 ± 0.04 Hz |

Adjustment method:

1) Disconnect the main power supply and lithium battery.
2) Connect Pin ㉘ (TEST) of IC651 to ground using a jumper wire (TEST mode).
3) Supply 3V (3.0 ± 0.05 Vdc) of power to the lithium battery terminals from a regulated power supply.
4) Adjust to 8192.00 ± 0.04 Hz using CV651.
5) Disconnect the regulated power supply and the jumper wire.

## 9-3. SERVO SYSTEM ADJUSTMENTS

### 9-3-1. Oscillation Frequency Adjustment (CO-2 Board)

| | |
|---|---|
| Mode | Playback |
| Signal | Arbitrary tape |
| Measurement Point | Pin ⑩ of IC621 |
| Measuring Instrument | Frequency counter |
| Adjustment Element | RV621 |
| Specified Value | 480 ± 5 kHz |

Adjustment method:

1) Set the oscillation frequency to 480 ± 5 kHz using RV621.

### 9-3-2. REC ATF Level Checking (CO-2 Board)

| | |
|---|---|
| Mode | Recording |
| Signal | No signal |
| Measurement Point | Emitter of Q530 |
| Measuring Instrument | Oscilloscope |
| Specified Value | Approx. 900 mVp-p |

Checking method:

1) Confirm that the REC ATF signal level is approximately 900 mVp-p.

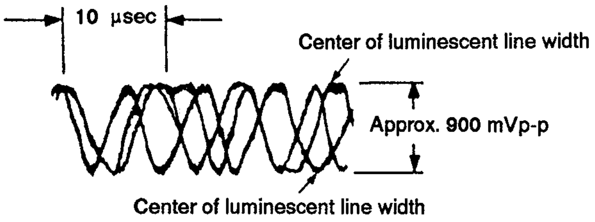

10 µsec
Center of luminescent line width
Approx. 900 mVp-p
Center of luminescent line width

Fig. 9-5. REC ATF level checking

### 9-3-3. Switching Position Adjustment (CO-2 Board)

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape:<br>For operation checking (WR5-5NSP) |
| Measurement Point | CH-1: J201 (video output) on CV-8 board<br>CH-2: Pin ④ (RF SWP) of CN102 |
| Measuring Instrument | Oscilloscope |
| Adjustment Element | RV501 |
| Specified Value | 6.5 ± 0.3H (410 ± 20 µs) |

Connections:

1) Connect Pin ③ (TEST A) and Pin ② (GND) of CN508 on the VK-1 board using a jumper wire. (Test 1 mode)

Adjustment method:

1) Adjust with RV102 so that it becomes 6.5 ± 0.3H (410 ± 20 µs).

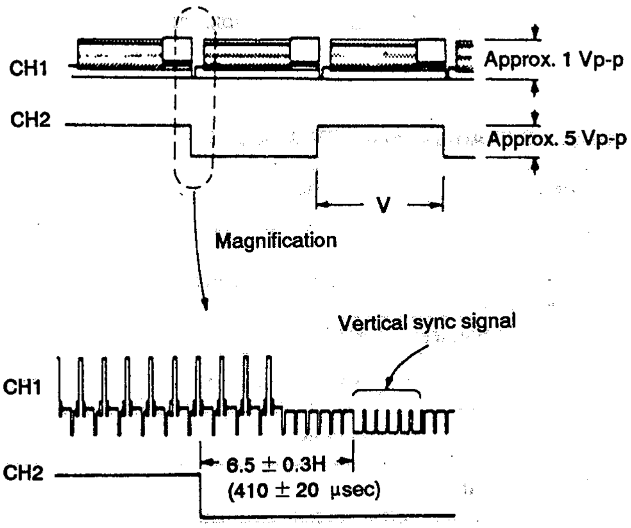

CH1
Approx. 1 Vp-p
CH2
Approx. 5 Vp-p
V
Magnification
Vertical sync signal
CH1
CH2
6.5 ± 0.3H
(410 ± 20 µsec)

Fig. 9-6. Switching position adjustment

### 9-3-4. Capstan FG Adjustment (CO-2 Board)

| | |
|---|---|
| Mode | Playback (LP) |
| Signal | Alignment tape:<br>For operation checking (WR5-4NL) |
| Measurement Point | Pin ① of IC510 |
| Measuring Instrument | Oscilloscope |
| Adjustment Element | RV502 |
| Specified Value | Minimum amplitude |

Adjustment method:

1) Adjust RV502 so there is minimum amplitude of the output waveform (capstan error) from Pin ① of IC510.

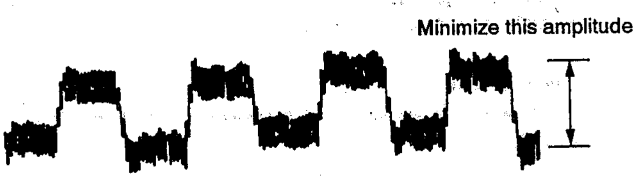


Fig. 9-7. Capstan FG adjustment

### 9-3-5. Still Adjustment (CV-8 Board)

| | |
|---|---|
| Mode | Playback pause |
| Signal | Self-recorded tape of color bars signal |
| Measurement Point | Monitor TV screen |
| Measuring Instrument | |
| Adjustment Element | RV552 |
| Specified Value | No noise on monitor TV screen except for upper and lower 1/3 sections. |

Adjustment method:

1) Play back the self-recorded tape and press the PAUSE button to set the playback pause mode after the image has stabilized.
2) Confirm that the noise on the monitor screen is confined to the upper and lower 1/3 sections.
3) If the specified condition is not satisfied, adjust RV552 and repeat 1) and 2).

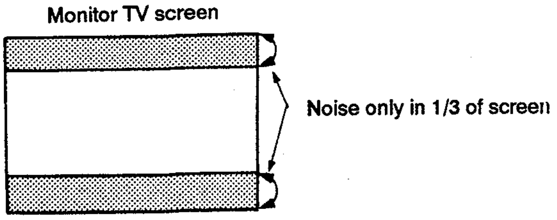


Fig. 9-8. Still adjustment

## 9-4. VIDEO BLOCK ADJUSTMENT

The adjustment of the video system should in principle follow the adjustment procedure outlined below.

The color video signal supplied from the pattern generator is utilized as the video input signal for video system adjustment in the recording mode. Make sure that the sync signal and color burst signal match the specifications given in set-up for adjustment, as shown in Fig. 9-2.

**[Adjustment procedure]**

1) Playback frequency characteristics adjustment
2) Flying erase check
3) Crystal oscillator fo adjustment
4) Y/C separation adjustment
5) IR2 adjustment
6) SYNC AGC adjustment
7) Emphasis input level adjustment
8) PB Y level adjustment
9) Y FM carrier frequency adjustment
10) Y FM deviation adjustment
11) Chroma emphasis fo adjustment
12) REC Y level adjustment
13) REC C level adjustment
14) DDS character position adjustment
15) Character generator fo adjustment

### 9-4-1. Playback Frequency Characteristics Adjustment (CO-2 Board)

#### 1. CH1, CH2 adjustment

The adjusting element for CH2 is shown in parentheses [ ].

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape:<br>For frequency characteristics adjustment (WR5-6N) |
| Measurement Point | Pin ③ of CN102<br>External trigger: Pin ④ of CN102<br>Trigger slope: +, [–] |
| Measuring Instrument | Oscilloscope |
| Adjustment Element | RV101 [RV102] |
| Specified Value | 3.58 MHz level : 5.5 MHz level=4 : 3 |

Adjustment method:

1) Adjust RV101 [RV102] so that the ratio of the 3.58 MHz level to the 5.5 MHz level is 4 : 3 [4 : 3].

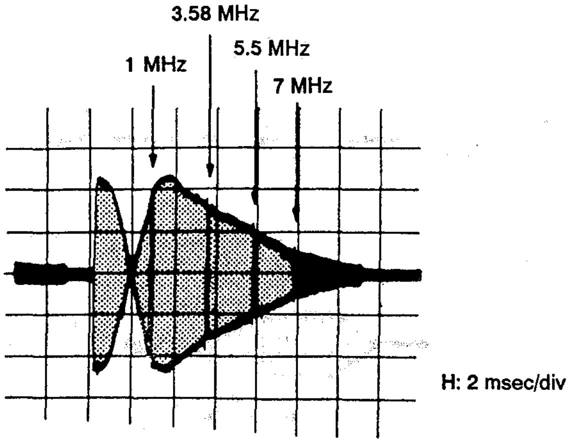


Fig. 9-9. Playback frequency characteristics adjustment

### 9-4-2. Flying Erase Check (CO-2 Board)

| | |
|---|---|
| Mode | Recording |
| Signal | Arbitrary |
| Measurement Point | Pin ⑫ of CN101 (TP103: FE (X)) |
| Measuring Instrument | Oscilloscope and frequency counter |
| Specified Value | Frequency: Over 7.5 MHz<br>Voltage: Over 7.0 Vp-p |

**Note:** Be sure to use MP type tape. (Pin ⑪ of CN501 should be "L".)

Checking method:

1) Confirm that the oscillation frequency is over 7.5 MHz and the oscillation voltage is over 7.0 Vp-p.

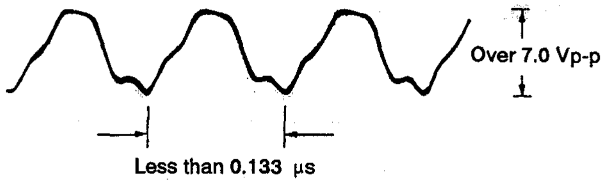


Fig. 9-10.

### 9-4-3. Crystal Oscillator fo Checking (CV-8 Board)

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape:<br>For operation checking (WR5-5NSP) |
| Measurement Point | Pin ㉕ of IC202 |
| Measuring Instrument | Frequency counter |
| Specified Value | 3579545 ± 70 Hz |

**Note:** Connect the frequency counter through a buffer having high impedance (approx. 10 MΩ ) and low capacitance (less than 10 pF).

Checking method:

1) Confirm that the oscillation frequency at Pin ㉕ of IC202 is 3579545 ± 70 Hz.

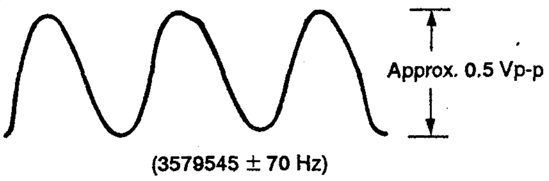


Fig. 9-11. Crystal oscillator fo adjustment

### 9-4-4. Y/C Separation Adjustment (CV-8 Board)

| | |
|---|---|
| Mode | Recording |
| Signal | Color bars |
| Measurement Point | Any terminal of RV204 (DEV)<br>(Pin ㉕ of IC203) |
| Measuring Instrument | Oscilloscope |
| Adjustment Element | RV202 |
| Specified Value | Minimum residual chroma component |

Connections:

1) Connect Pin ㊴ of IC203 (Pin ⑮ of IC202) to GND (TP201) with a 10 μF/16V electrolytic capacitor. (Capacitor negative side to GND)

Adjustment method:

1) Set the residual chroma component to minimum with RV202.

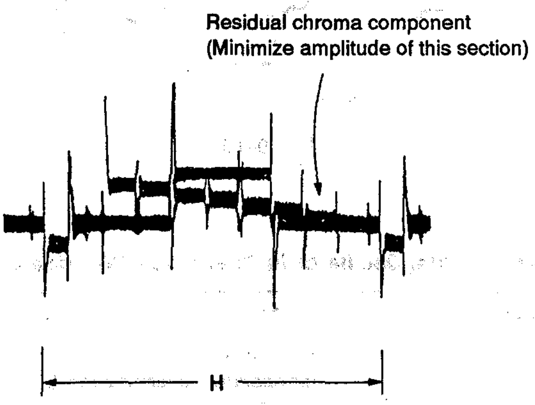

Residual chroma component
(Minimize amplitude of this section)
H

Fig. 9-12. Y/C separation adjustment

### 9-4-5. IR2 Adjustment (CV-8 Board)

| | |
|---|---|
| Mode | Recording |
| Signal | Color bars |
| Measurement Point | CH1: Pin ⑤ of IC203<br>(REC C RF OUT)<br>CH2: Pin ⑧ of IC203 or<br>base of Q252 (BF OUT) |
| Measuring Instrument | Oscilloscope |
| Adjustment Element | RV203 |
| Specified Value | a=b (see Fig. 9-13) |

Adjustment method:

1) Line up the falling edge (‾|_) of the CH2 burst pulse with the center of the CH1 burst signal using RV203. (See Fig. 9-13.)

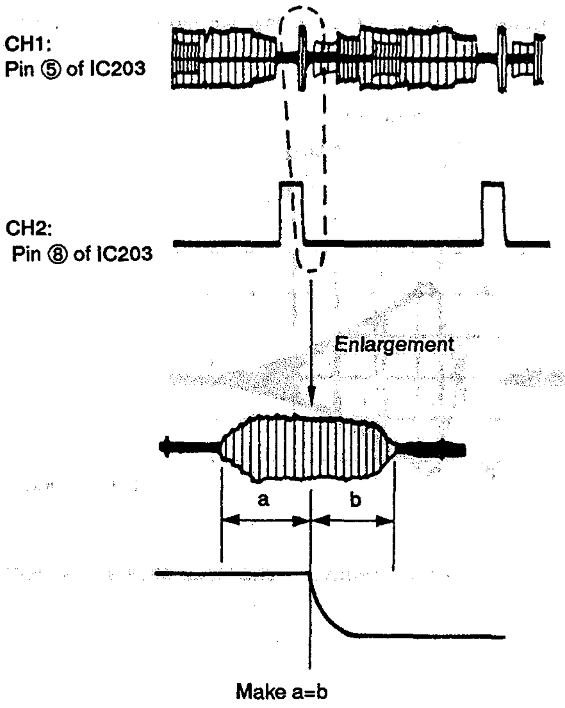

CH1:
Pin ⑤ of IC203
CH2:
Pin ⑧ of IC203
Enlargement
a
b
Make a=b

Fig. 9-13. IR2 adjustment

### 9-4-6. SYNC AGC Adjustment (CV-8 Board)

| | |
|---|---|
| Mode | Recording |
| Signal | Color bar |
| Measurement Point | Pin ㊾ of IC203 |
| Measuring Instrument | Oscilloscope |
| Adjustment Element | RV201 |
| Specified Value | 0.50 ± 0.025 Vp-p |

Adjustment method:

1) Adjust with RV201 so that it becomes 0.50 ± 0.025 Vp-p.

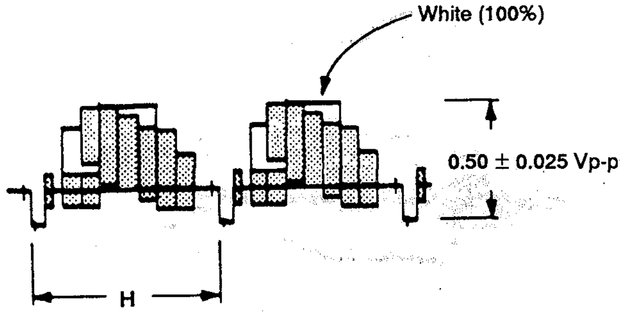


Fig. 9-14. SYNC AGC adjustment

### 9-4-7. Emphasis Input Level Adjustment (CV-8 Board)

| | |
|---|---|
| Mode | Recording |
| Signal | Color bar |
| Measurement Point | Pin (54) of IC203 |
| Measuring Instrument | Oscilloscope |
| Adjustment Element | RV209 |
| Specified Value | 0.50 ± 0.025 Vp-p |

Adjustment method:

1) Adjust with RV209 so that it becomes 0.50 ± 0.025 Vp-p.

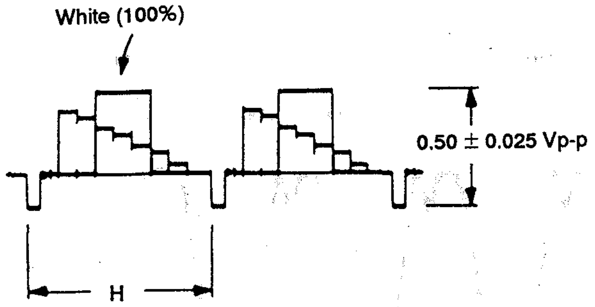


Fig. 9-15. Emphasis input level adjustment

### 9-4-8. PB Y Level Adjustment (CV-8 Board)

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape:<br>For operation checking (WR5-5NSP)<br>Color bar section |
| Measurement Point | J201 (VIDEO OUT) |
| Measuring Instrument | Oscilloscope |
| Adjustment Element | RV206 |
| Specified Value | 1.00 ± 0.05 Vp-p |

**Note:** Terminate VIDEO OUT (J201) at 75Ω.

Adjustment method:

1) Adjust with RV206 so that it becomes 1.00 ± 0.05 Vp-p.

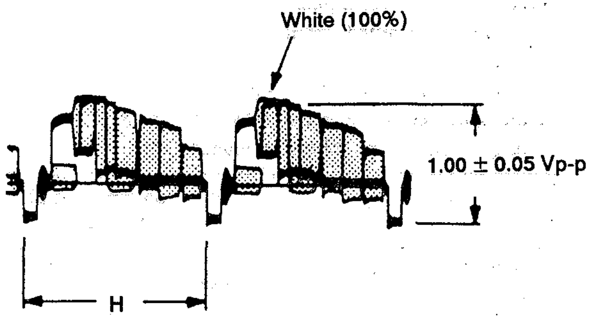


Fig. 9-16. PB Y level adjustment

### 9-4-9. Y FM Carrier Frequency Adjustment (CV-8 Board)

| | |
|---|---|
| Mode | Recording |
| Signal | No signal |
| Measurement Point | Emitter of Q232 side terminal of RV207 (REC Y) |
| Measuring Instrument | Frequency counter |
| Adjustment Element | RV205 |
| Specified Value | 4.38 ± 0.04 MHz |

Adjustment method:

1) Adjust to 4.38 ± 0.04 MHz with RV205.
2) Perform "Deviation Adjustment".

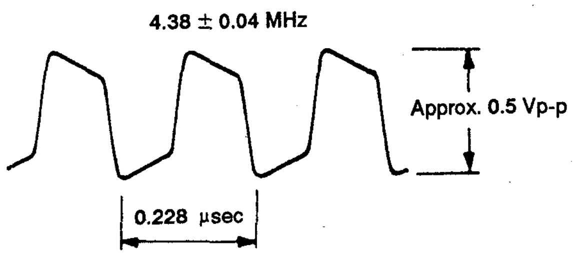


Fig. 9-17. Y FM carrier frequency adjustment

### 9-4-10. Y FM Deviation Adjustment (CV-8 Board)

| | |
|---|---|
| Mode | Recording and playback |
| Signal | Color bar |
| Measurement Point | J201 (VIDEO OUT) |
| Measuring Instrument | Oscilloscope |
| Adjustment Element | RV204 |
| Specified Value | Playback level is 1.00 ± 0.05 Vp-p |

**Notes:** 1) Confirm that "PB Y Level Adjustment" and "Y FM Carrier Frequency Adjustment" have been completed.
2) Terminate VIDEO OUT (J201) at 75Ω.

Adjustment method:
1) Record the color bar signal.
2) Playback the recorded signal.
3) Confirm the playback output.
Specified value: 1.00 ± 0.05 Vp-p
4) If the specified value is not satisfied, repeat 1) to 3) after turning RV204 in the following manner.

| | Rotation direction of RV204 |
|---|---|
| When smaller than specified value | Clockwise (↻) |
| When larger than specified value | Counterclockwise (↺) |

Table 9-1.

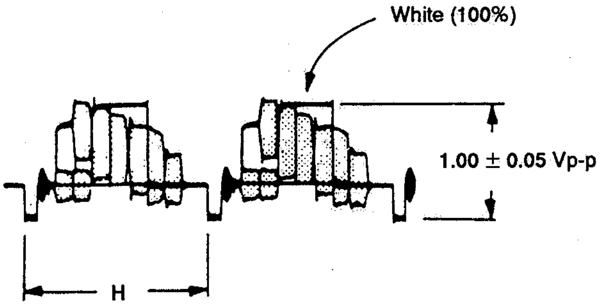

White (100%)
1.00 ± 0.05 Vp-p
H

Fig. 9-18. Y FM deviation adjustment

### 9-4-11. Chroma Emphasis fo Adjustment (CV-8 Board)

| | |
|---|---|
| Mode | Recording |
| Signal | Color bar |
| Measurement Point | Center terminal of RV208 (REC C) |
| Measuring Instrument | Oscilloscope |
| Adjustment Element | FL202 |
| Specified Value | Minimum fo component |

Adjustment method:
1) Adjust with FL202 so that amplitude of the flat section of the chroma signal REC section becomes minimum.

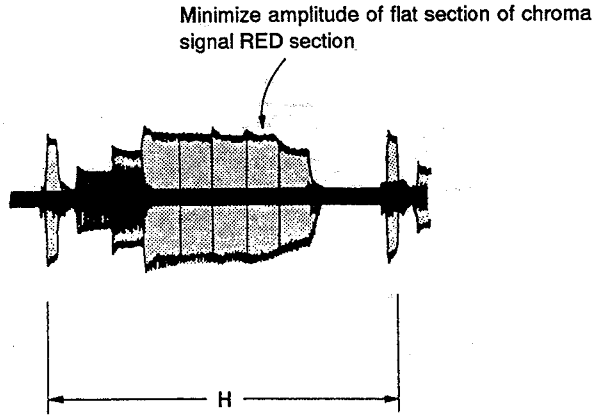

Minimize amplitude of flat section of chroma signal RED section
H

Fig. 9-19. Chroma emphasis fo adjustment

### 9-4-12. REC Y Level Adjustment (CV-8 Board)

| | |
|---|---|
| Mode | Recording |
| Signal | No signal |
| Measurement Point | Emitter of Q230 (Pin ⑯ of CN502) |
| Measuring Instrument | Oscilloscope |
| Adjustment Element | RV207 |
| Specified Value | 265 ± 10 mVp-p |

Adjustment method:
1) Adjust with RV207 so that it becomes 265 ± 10 mVp-p.

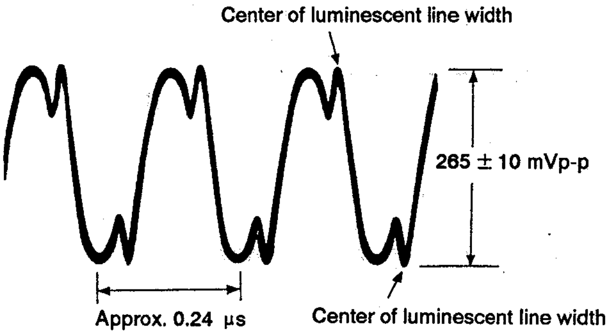

Center of luminescent line width
265 ± 10 mVp-p
Approx. 0.24 µs
Center of luminescent line width

Fig. 9-20. REC Y Level Adjustment

### 9-4-13. REC C Level Adjustment (CV-8 Board)

| | |
|---|---|
| Mode | Recording |
| Signal | Color bar |
| Measurement Point | Emitter of Q233 (Pin ⑱ of CN502) |
| Measuring Instrument | Oscilloscope |
| Adjustment Element | RV208 |
| Specified Value | 105 ± 10 mVp-p |

Adjustment method:

1) Adjust with RV208 so that it becomes 105 ± 10 mVp-p.

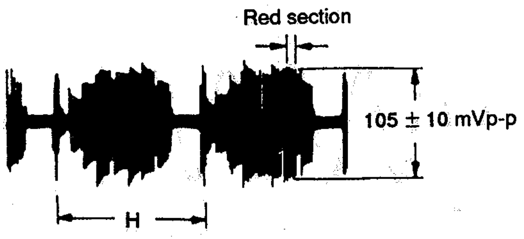


Fig. 9-21. REC C level adjustment

### 9-4-14. DDS Character Position Adjustment (CV-8 Board)

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape:<br>For operation checking (WR5-5NSP)<br>Color bar section |
| Measurement Point | Confirm on monitor TV screen |
| Measuring Instrument | |
| Adjustment Element | CV501 |
| Specified Value | See Fig. 9-22. |

Adjustment method:

1) Press the data screen button for indication of the counter on the monitor TV screen.
2) Adjust CV501 until the right inner contour of the number at the right side of the count indication is lined up with the border line between the red and blue color bars.

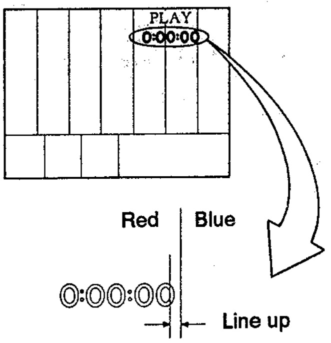


Fig. 9-22.

### 9-4-15. Character Generator fo Adjustment (CV-8 Board)

| | |
|---|---|
| Mode | E-E |
| Signal | Non-signal |
| Measurement Point | Pin ⑲ of IC501 |
| Measuring Instrument | Frequency counter |
| Adjustment Element | CV502 |
| Specified Value | 15734 ± 100 Hz |

Adjustment method:

1) Adjust CV502 so that it becomes 15734 ± 100 Hz.

## 9-5. AUDIO SYSTEM ADJUSTMENT

- Perform adjustment with the color bar signal used as the video input signal.

**[Connection of audio measuring instruments]**

In addition to the video system measuring instruments, connect the audio system measuring instruments as shown in the figure below, and set the power switch to the video position for adjustment.

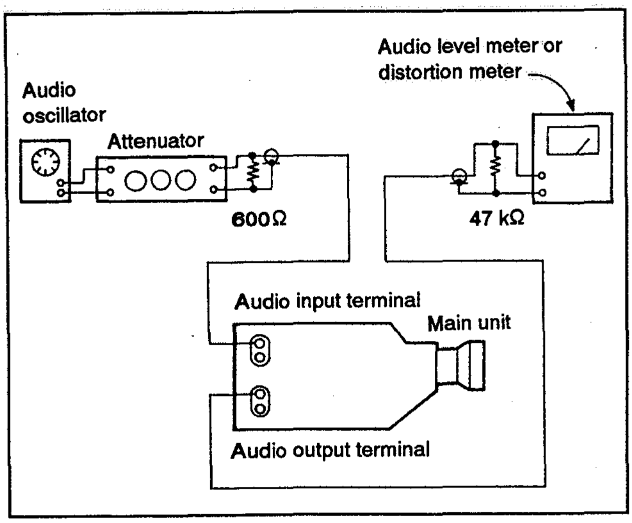

Audio level meter or distortion meter
Audio oscillator
Attenuator
600Ω
47 kΩ
Audio input terminal
Main unit
Audio output terminal

Fig. 9-23.

### 9-5-1. AFM Carrier Frequency Check (CO-2 Board)

| | |
|---|---|
| Mode | Recording |
| Signal | Non-signal |
| Measurement Point | Pin ㉑ of IC401(REC AFM) |
| Measuring Instrument | Frequency counter |
| Specified Value | 1.50 ± 0.01 MHz |

**Note:** Connect the frequency counter through a buffer amplifier (oscilloscope, etc.) having high impedance and low capacitance.

Checking method:

1) Turn OFF the audio oscillator output.
2) Confirm that the AFM carrier frequency is 1.50 ± 0.01 MHz.

### 9-5-2. REC AFM Carrier Level Adjustment (CO-2 Board)

| | |
|---|---|
| Mode | Recording |
| Signal | Non-signal |
| Measurement Point | Pin ㉑ of IC401 (REC AFM) |
| Measuring Instrument | Oscilloscope |
| Specified Value | 160 ± 5 mVp-p |

Checking method:

1) Confirm that the level is 160 ± 5 mVp-p.

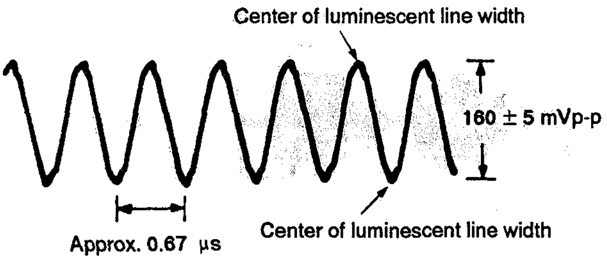

Center of luminescent line width
160 ± 5 mVp-p
Approx. 0.67 μs
Center of luminescent line width

Fig. 9-24. REC AFM recording current adjustment

### 9-5-3. Playback Level Check

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape:<br>Operation checking (WR5-5NSP) |
| Measurement Point | Audio output terminal |
| Measuring Instrument | Audio level meter |
| Specified Value | –7.5 ± 2 dBs |

Checking method:

1) Confirm that the audio output level is –7.5 ± 2 dBs.

### 9-5-4. E-E Output Level Check

| | |
|---|---|
| Mode | E-E |
| Signal | 400 Hz, –7.5 dBs |
| Measurement Point | Audio output terminal |
| Measuring Instrument | Audio level meter |
| Specified Value | –7.5 ± 2 dBs |

Checking method:

1) Make sure that the audio output level is –7.5 ± 2 dBs.

### 9-5-5. Overall Level Characteristics Check

| | |
|---|---|
| Mode | Self-recording and playback |
| Signal | 400 Hz, –7.5 dBs |
| Measurement Point | Audio output terminal |
| Measuring Instrument | Audio level meter |
| Specified Value | –7.5 ± 3 dBs |

Checking method:
1) Record the signal.
2) Playback the recorded section.
3) Make sure that the audio output level is –7.5 ± 3 dBs.

### 9-5-6. Overall Frequency Characteristics Check

| | |
|---|---|
| Mode | Self-recording and playback |
| Signal | Ⓐ 400 Hz, –17.5 dBs<br>Ⓑ 30 Hz, –17.5 dBs<br>Ⓒ 10 Hz, –17.5 dBs |
| Measurement Point | Audio output terminal |
| Measuring Instrument | Audio level meter |
| Specified Value | With the 400 Hz playback output level as 0 dB, the playback output level of 30 Hz and 14 kHz is 0 ± 3 dB |

Checking method:
1) Record signal Ⓐ through Ⓒ in order.
2) Playback the recorded sections.
3) With the 400 Hz playback output level as 0 dB, confirm that the playback output level of 30 Hz and 14 kHz is 0 ± 3 dB.

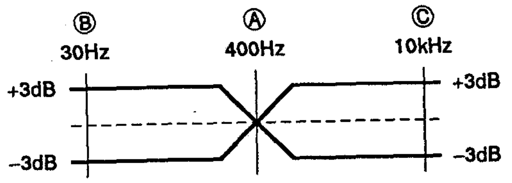


Fig. 9-25. AFM overall frequency characteristics

### 9-5-7. Overall Distortion Check

| | |
|---|---|
| Mode | Self recording and playback |
| Signal | 400 Hz, –7.5 dBs |
| Measurement Point | Audio output terminal |
| Measuring Instrument | Distortion meter |
| Specified Value | Less than 0.5% [*1] |

Checking method:
1) Record the signal.
2) Playback the recorded section.
3) Confirm that the distortion is less than 0.5%. [*1]

[*1] Value when 200 Hz – 6 kHz BPF is used

### 9-5-8. Overall Noise Level Check

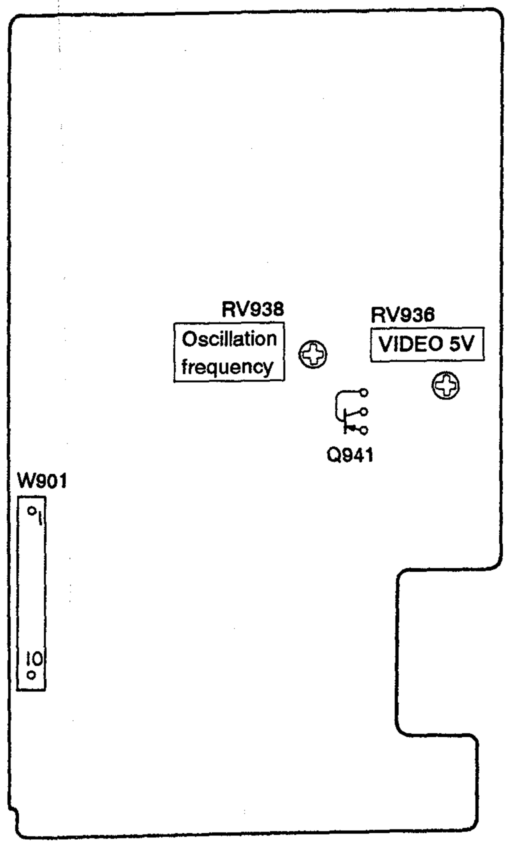
| | |
|---|---|
| Mode | Self-recording and playback |
| Signal | No signal<br>(shorting plug is inserted into audio input jack) |
| Measurement Point | Audio input terminal |
| Measuring Instrument | Audio level meter |
| Specified Value | Less than –67 dBs[*2] |

Checking method:
1) Record the signal.
2) Playback the recorded section.
3) Make sure that the noise level is less than –67 dBs. [*2]

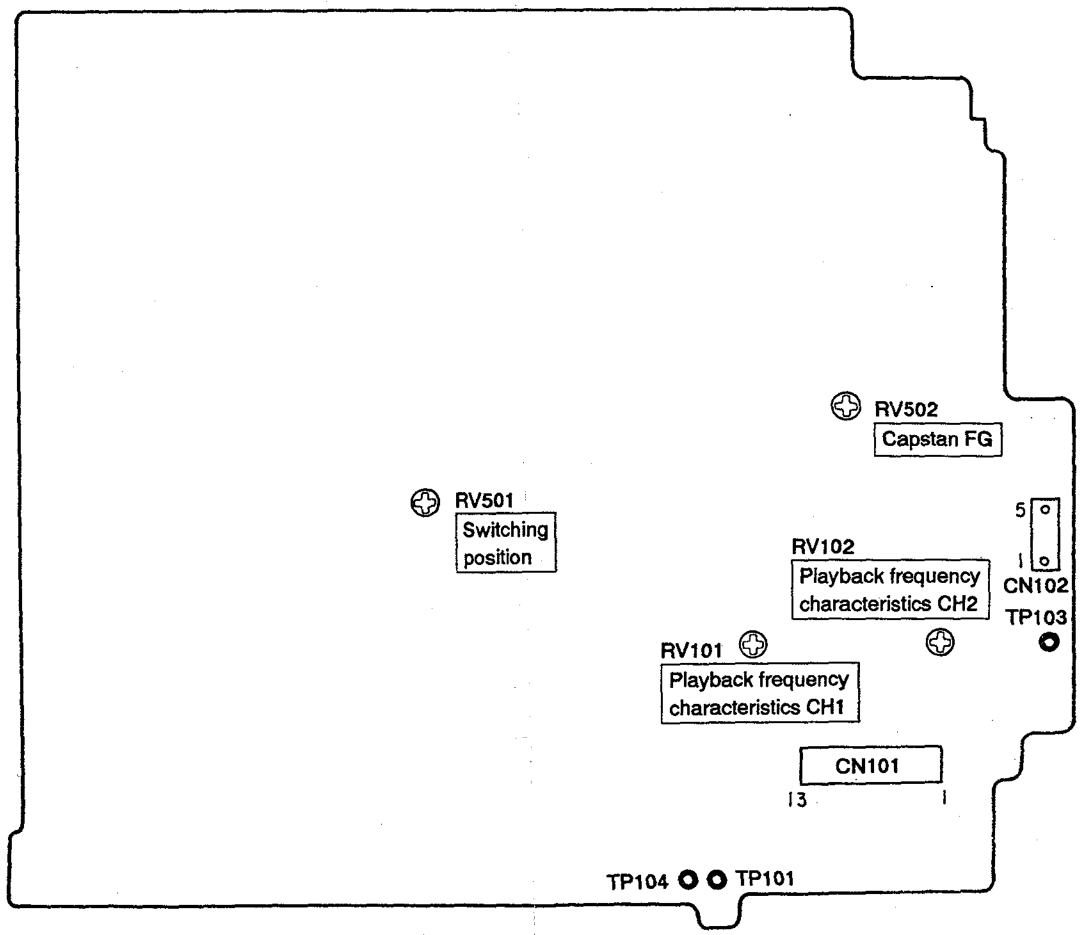
[*2] Value when HF-A hearing correction filter is used.

## 9-6. ADJUSTMENT ELEMENTS LOCATION

**PS-180 BOARD (COMPONENT SIDE)**

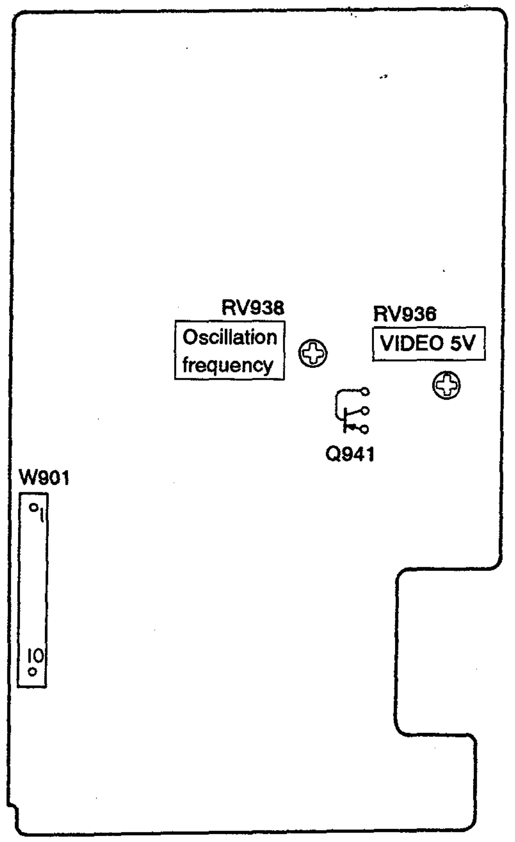

RV938
Oscillation frequency
RV936
VIDEO 5V
Q941
W901
1
10

**CO-2 BOARD (CONDUCTOR SIDE)**


RV502
Capstan FG
RV501
Switching position
5
1
CN102
RV102
Playback frequency characteristics CH2
TP103
RV101
Playback frequency characteristics CH1
CN101
13
1
TP104
TP101

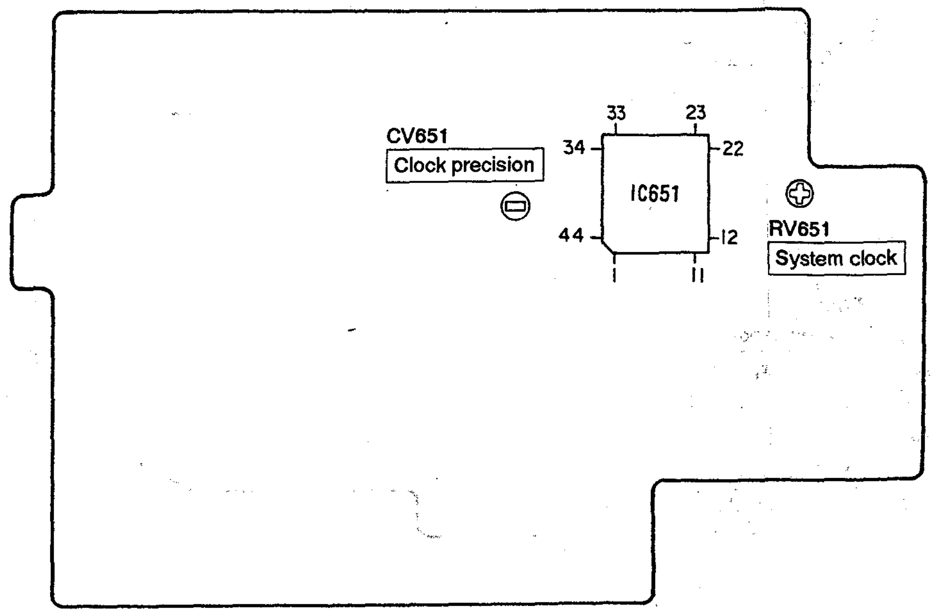
## 9-6. ADJUSTMENT ELEMENTS LOCATION

### PS-180 BOARD (COMPONENT SIDE)



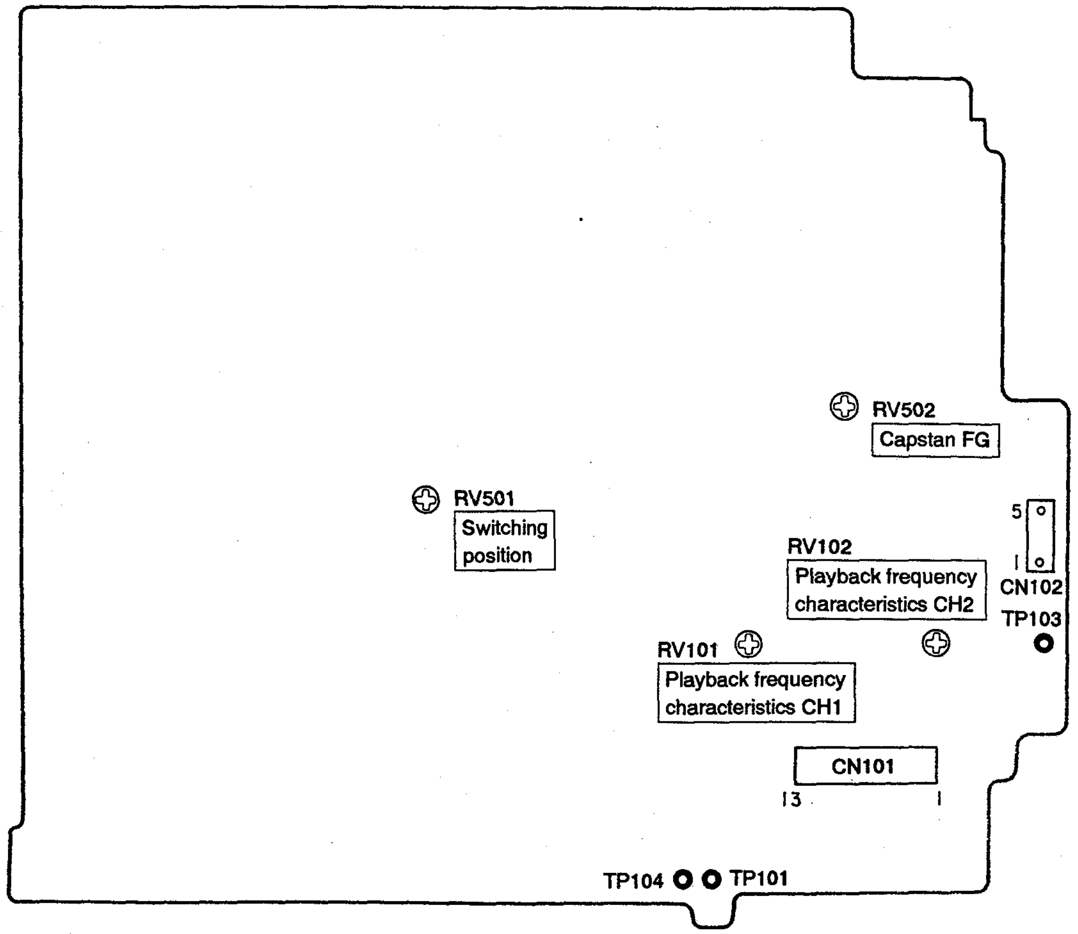
RV938
Oscillation frequency
RV936
VIDEO 5V
Q941
W901
1
10

### CK-8 BOARD (COMPONENT SIDE)



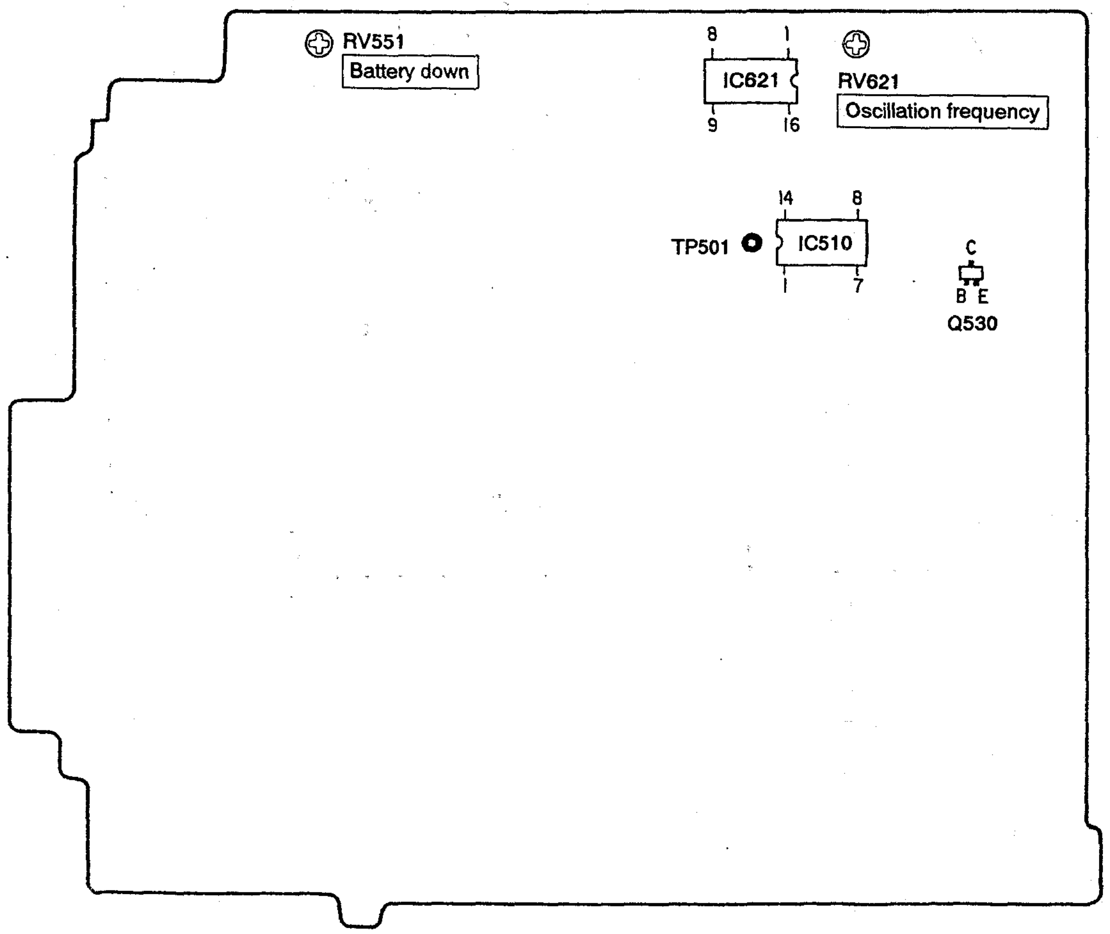
CV651
Clock precision
33
23
34
22
IC651
44
12
1
11
RV651
System clock

### CO-2 BOARD (CONDUCTOR SIDE)



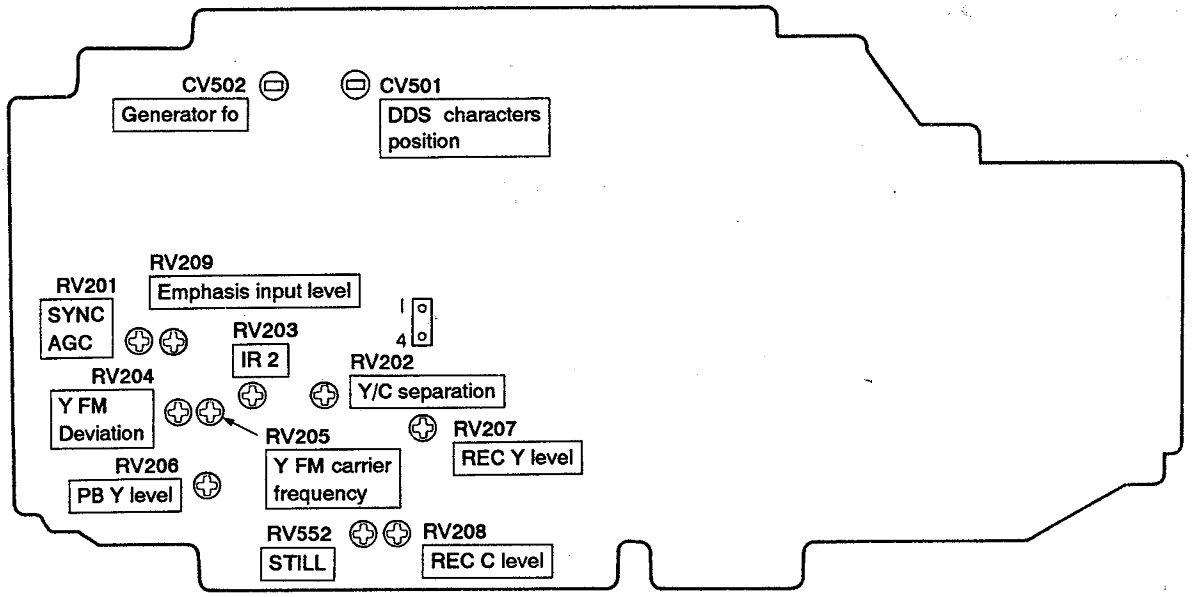
RV502
Capstan FG
RV501
Switching position
5
1
CN102
RV102
Playback frequency characteristics CH2
TP103
RV101
Playback frequency characteristics CH1
CN101
13
1
TP104
TP101

### CO-2 BOARD (COMPONENT SIDE)

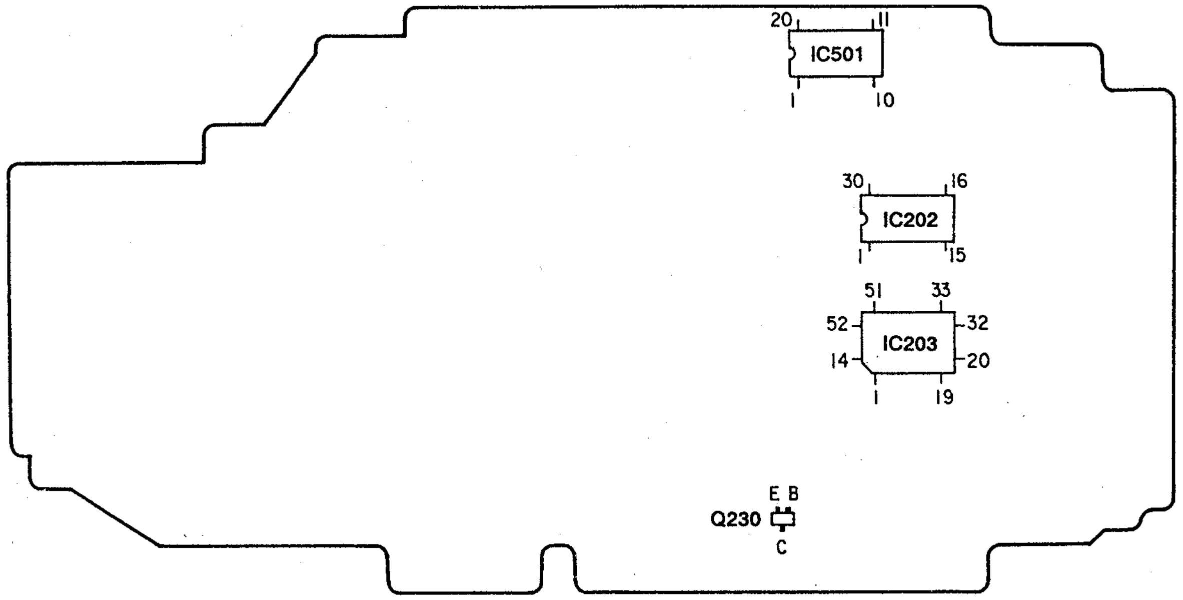


RV551
Battery down
8
1
IC621
9
16
RV621
Oscillation frequency
14
8
TP501
IC510
1
7
C
B E
Q530

## CV-8 BOARD (COMPONENT SIDE)


CV502
Generator fo
CV501
DDS characters position
RV209
Emphasis input level
RV201
SYNC AGC
RV203
IR 2
1
4
RV202
Y/C separation
RV204
Y FM Deviation
RV205
Y FM carrier frequency
RV207
REC Y level
RV206
PB Y level
RV552
STILL
RV208
REC C level

## CV-8 BOARD (CONDUCTOR SIDE)


20
11
IC501
1
10
30
16
IC202
1
15
51
33
52
32
IC203
14
20
1
19
E B
Q230
C

# CCD-F35/F36/F280

**SONY®**

# SERVICE MANUAL

*US Model*
*CCD-F35/F36*
*Canadian Model*
*CCD-F35*
*E Model*
*CCD-F280*

## SUPPLEMENT-1

**Subject:**
**VIEWFINDER SECTION**
**NEW TYPE ADDITION**

- File this Supplement-1 with the Service Manual.

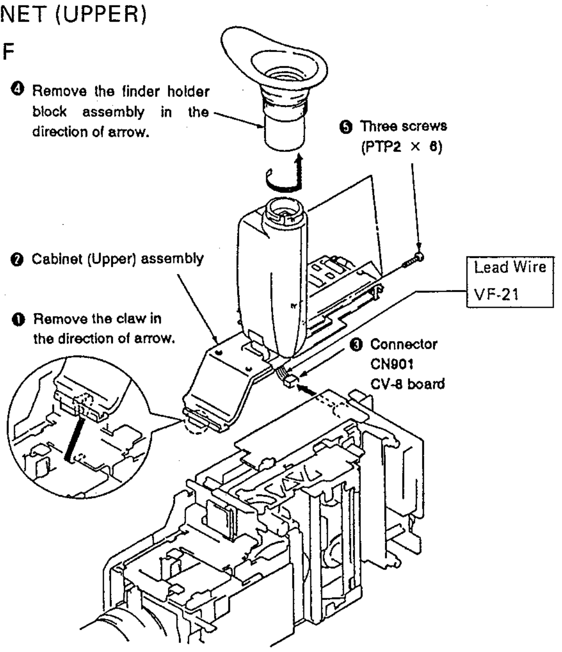
For the viewfinder section of CCD-F35/F36/F280, besides former type (Type A), new type (Type B) has been added.

This supplement is for Type B.

| | | |
|---|---|---|
| Type A | Color of lead wire (VF-21) which connectes EVF and CV-8 board is gray. | Refer to the service manual previously issued. |
| Type B | Color of lead wire (VF-21) is white. | This supplement is useful. |

Lead wire (VF-21):

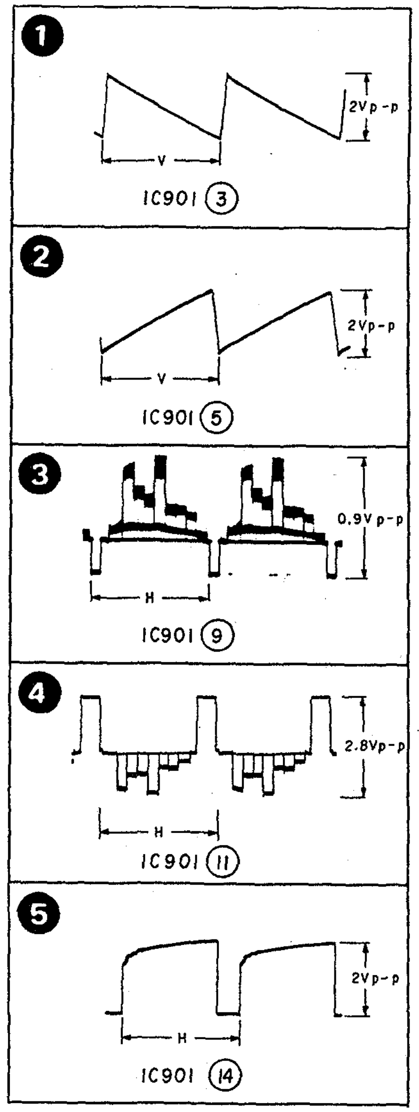
REMOVAL OF CABINET (UPPER) ASSEMBLY AND EVF


❹ Remove the finder holder block assembly in the direction of arrow.
❺ Three screws (PTP2 × 6)
❷ Cabinet (Upper) assembly
Lead Wire VF-21
❶ Remove the claw in the direction of arrow.
❸ Connector CN901 CV-8 board

## VF-22 (VIEW FINDER), LD-13 (TALLY LED) PRINTED WIRING BOARD

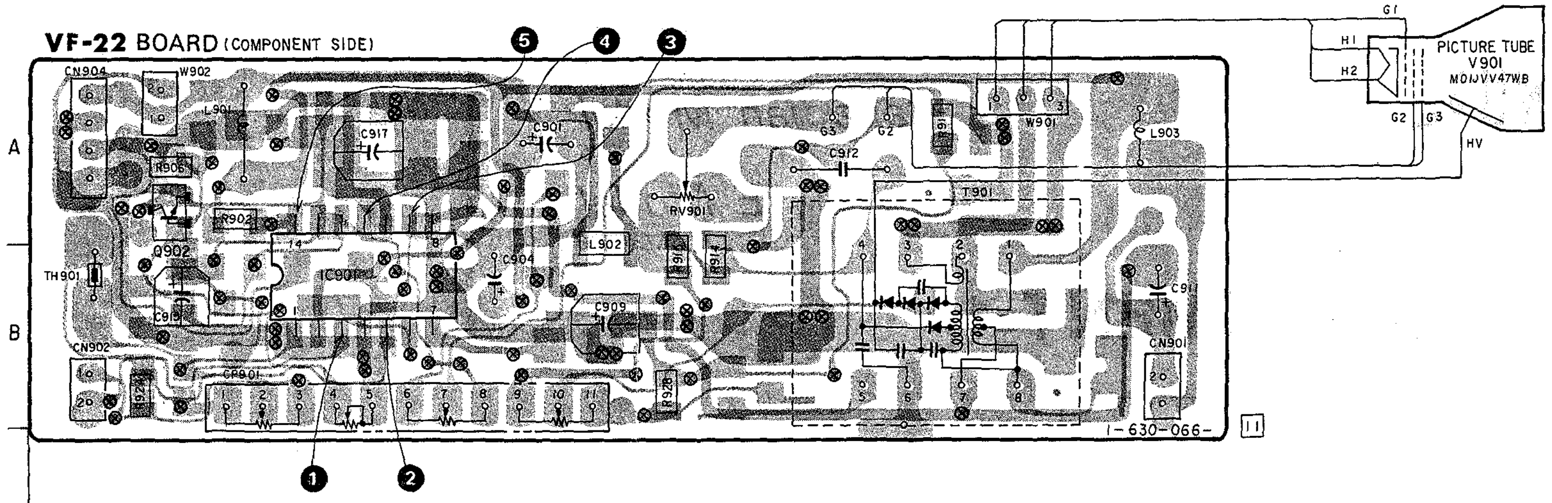
— Ref. No. VF-22, LD-13 BOARD : 6000 series —

### VF-22 BOARD



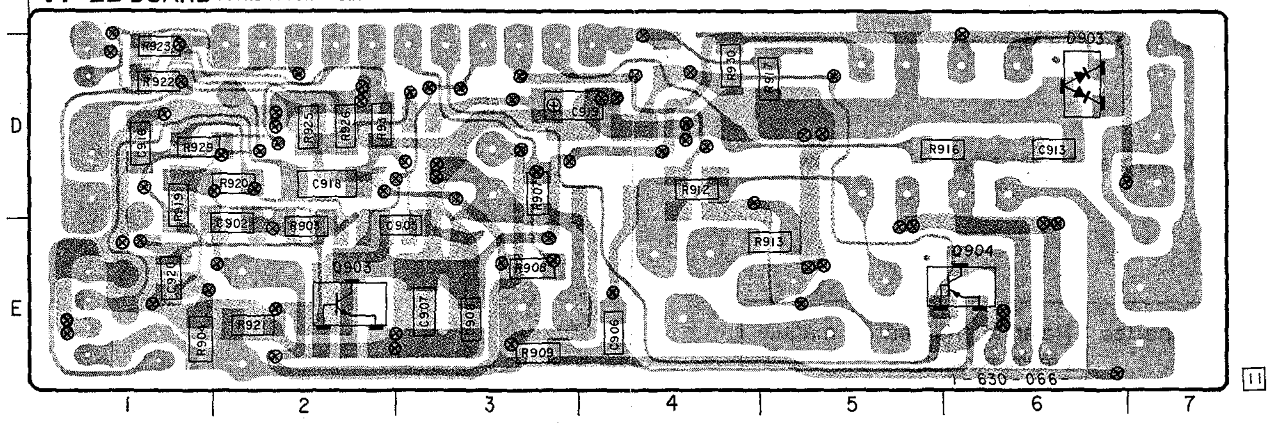
| VF-22 BOARD | |
|---|---|
| CN901 | B-7 |
| CN902 | B-1 |
| CN904 | A-1 |
| D903 | D-6 |
| IC901 | B-2 |
| Q902 | A-1 |
| Q903 | E-2 |
| Q904 | E-6 |
| RV901 | A-4 |
| W901 | A-6 |
| W902 | A-1 |

**VF-22** BOARD (COMPONENT SIDE)



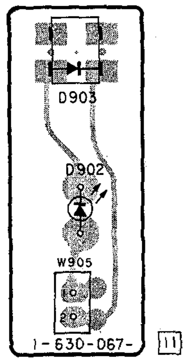
❺
❹
❸
❶
❷
A
B
C
CN904
W902
L901
C917
C901
C912
G3
G2
W901
L903
T901
RV901
L902
IC901
Q902
TH901
C904
C909
C911
CN902
CN901
CP901
R905
R902
C913
1-630-066-
11
G1
H1
H2
PICTURE TUBE
V901
MO1JVV47WB
G2
G3
HV

**VF-22** BOARD (CONDUCTOR SIDE)



D
E
R923
R922
R928
R920
R918
C902
R903
C905
C906
C907
Q903
R921
R904
R908
R906
R909
R910
R912
R913
R916
C913
D903
Q904
1-630-066-
11
1
2
3
4
5
6
7

**LD-17** BOARD



D903
D902
W905
1-630-067-
11

# CCD-F35/F36/F280

**SONY**®

# SERVICE MANUAL

*US Model*
*CCD-F35/F36*
*Canadian Model*
*CCD-F35*
*E Model*
*CCD-F280*

## SUPPLEMENT-1

**Subject:**
**VIEWFINDER SECTION**
**NEW TYPE ADDITION**

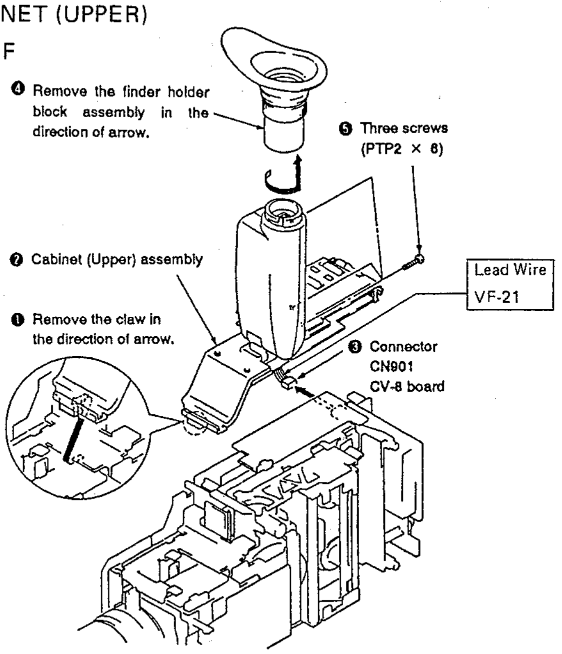
- File this Supplement-1 with the Service Manual.

For the viewfinder section of CCD-F35/F36/F280, besides former type (Type A), new type (Type B) has been added.

This supplement is for Type B.

| | | |
|---|---|---|
| Type A | Color of lead wire (VF-21) which connectes EVF and CV-8 board is gray. | Refer to the service manual previously issued. |
| Type B | Color of lead wire (VF-21) is white. | This supplement is useful. |

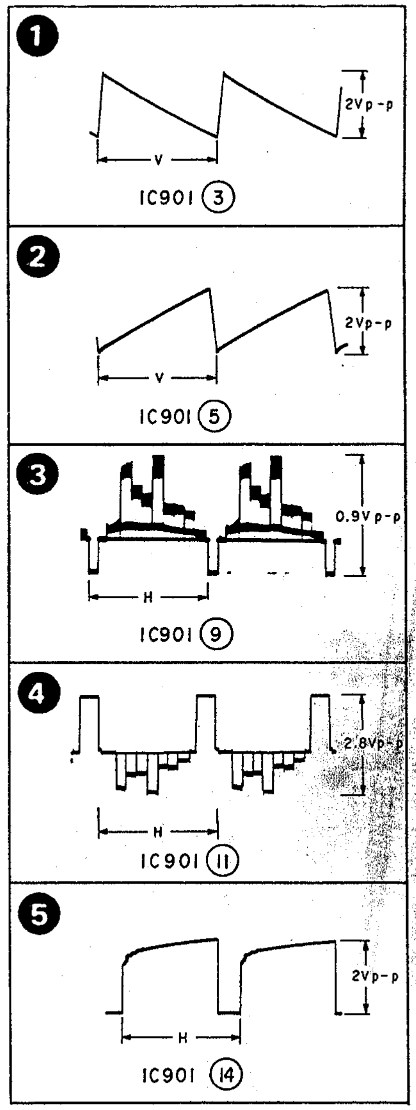
Lead wire (VF-21):
REMOVAL OF CABINET (UPPER)
ASSEMBLY AND EVF


❹ Remove the finder holder block assembly in the direction of arrow.
❺ Three screws (PTP2 × 6)
❷ Cabinet (Upper) assembly
Lead Wire VF-21
❶ Remove the claw in the direction of arrow.
❸ Connector CN901 CV-8 board

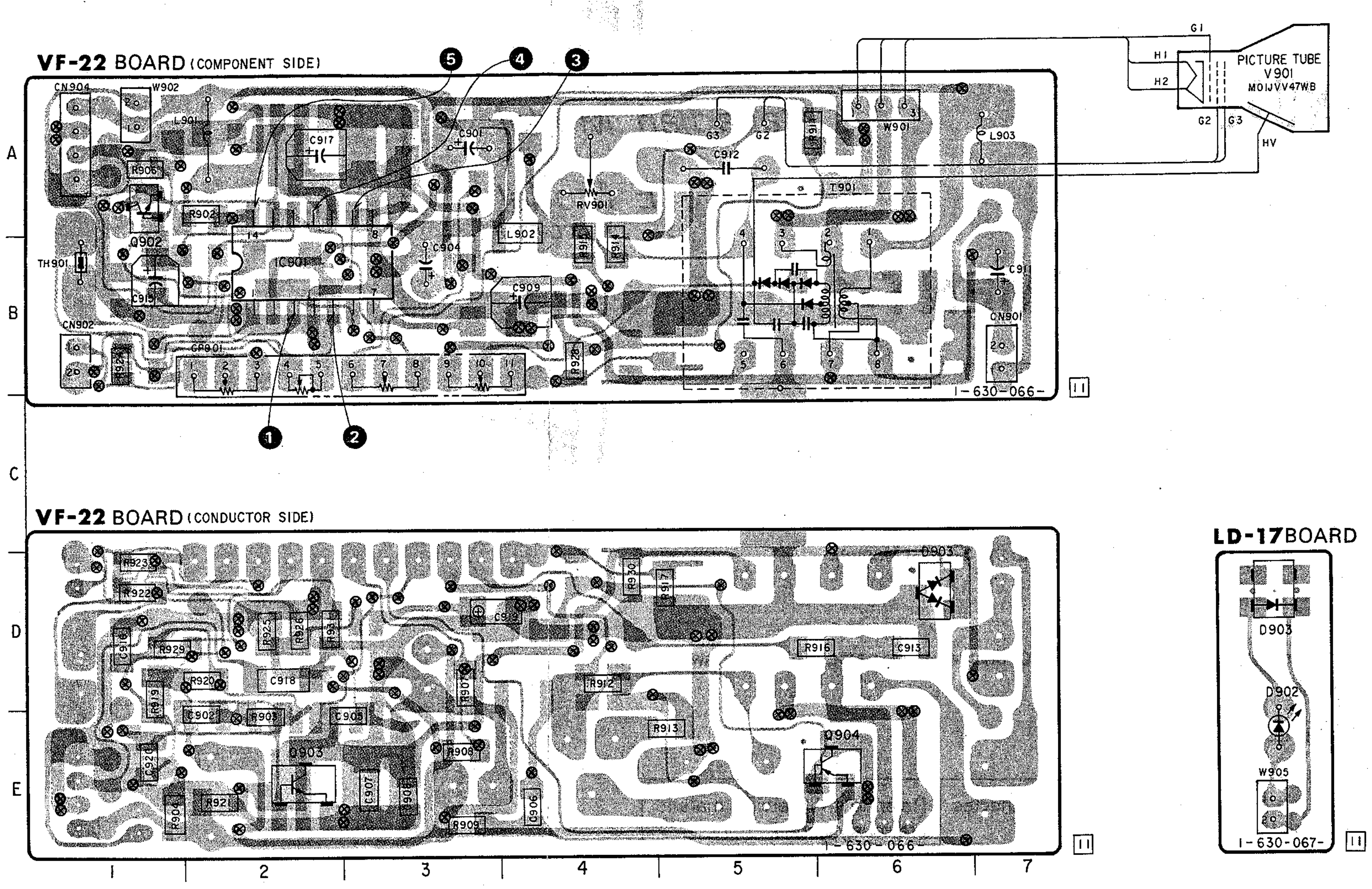
## VF-22 (VIEW FINDER), LD-13 (TALLY LED) PRINTED WIRING BOARD

— Ref. No. VF-22, LD-13 BOARD : 6000 series —

### VF-22 BOARD



| VF-22 BOARD | |
|---|---|
| CN901 | B-7 |
| CN902 | B-1 |
| CN904 | A-1 |
| D903 | D-6 |
| IC901 | B-2 |
| Q902 | A-1 |
| Q903 | E-2 |
| Q904 | E-6 |
| RV901 | A-4 |
| W901 | A-6 |
| W902 | A-1 |


❺
❹
❸
CN904
W902
C917
C901
C912
G3
G2
W901
L903
R906
R902
Q902
R901
RV901
T901
L902
C904
TH901
IC901
C913
C909
C911
CN902
CN901
CP901
R927
1-630-066-
11
❶
❷
A
B
C
D
E
G1
H1
H2
PICTURE TUBE
V901
M01JVV47WB
G2
G3
HV
R923
R922
R925
C916
R920
C918
C902
R903
C905
Q903
C907
R904
R921
R908
R909
C915
R910
R912
R913
R916
C913
D903
Q904
1-630-066-
11
1
2
3
4
5
6
7
D903
D902
W905
1-630-067-
11

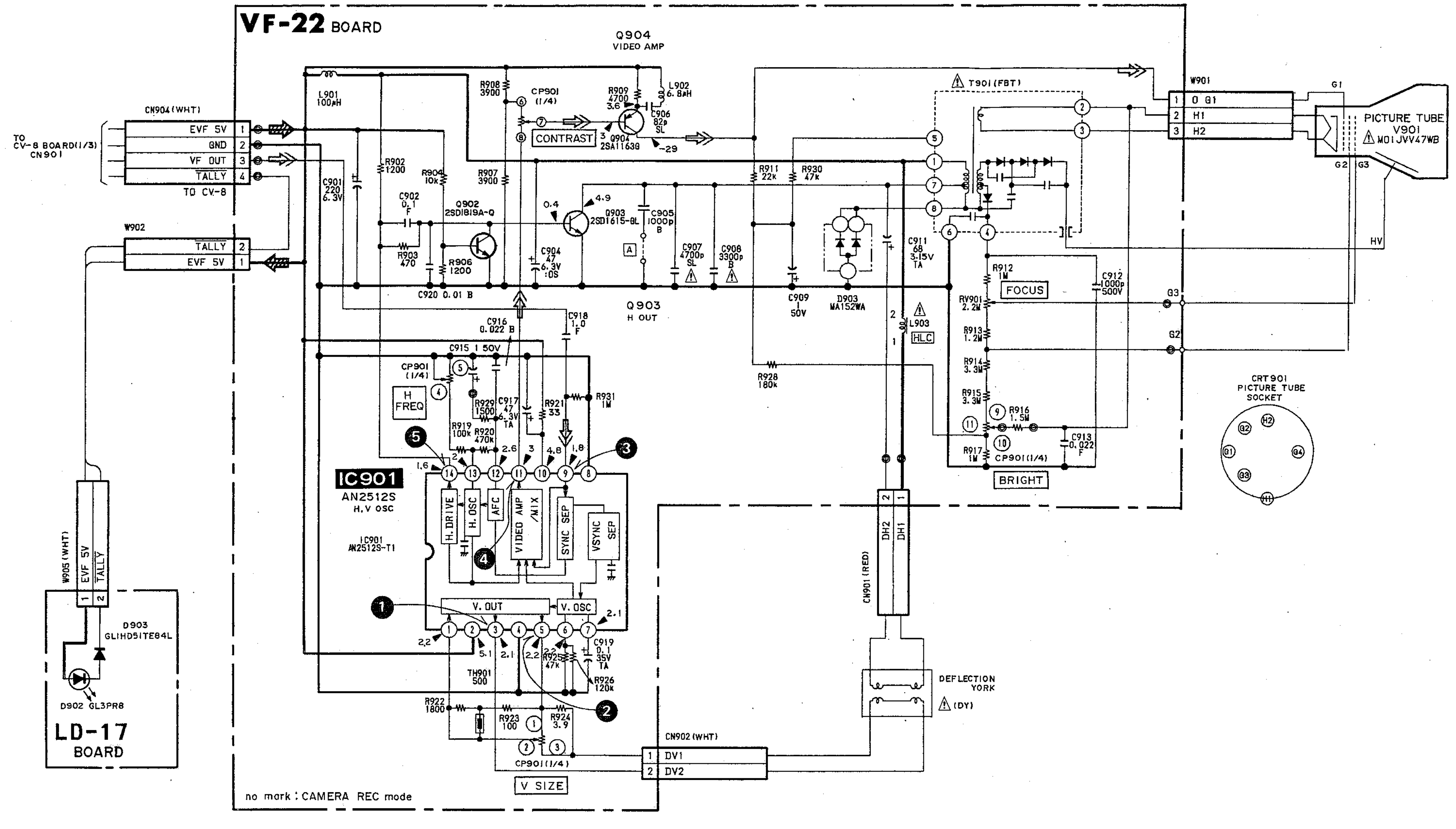
VF-22 BOARD (COMPONENT SIDE)

VF-22 BOARD (CONDUCTOR SIDE)

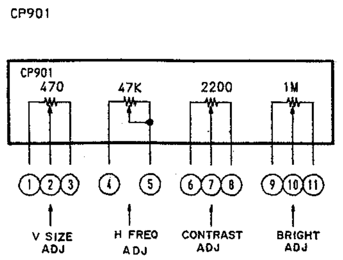
LD-17 BOARD

## VF-22 (VIEW FINDER), LD-13 (TALLY LED) SCHEMATIC DIAGRAM

— Ref. No. VF-22, LD-13 BOARD : 6000 series —


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H I J
VF-22 BOARD
Q904 VIDEO AMP
TO CV-8 BOARD(1/3) CN901
CN904 (WHT)
EVF 5V
GND
VF OUT
TALLY
TO CV-8
W902
TALLY
EVF 5V
L901 100μH
C901 220 6.3V
R902 1200
R904 10k
R908 3900
CP901 (1/4)
CONTRAST
R909 4700
2SA1163G
L902 6.8μH
C906 82p SL
Q902 2SD1819A-Q
R907 3900
Q903 2SD1615-BL
C905 1000p B
C902 0.1 F
R903 470
R906 1200
C904 47 6.3V
C920 0.01 B
C907 4700p SL
C908 3300p B
Q903 H OUT
T901 (FBT)
R911 22k
R930 47k
C909 50V
D903 MA152WA
C911 68 3.15V TA
L903 HLC
R928 180k
R912 1M
FOCUS
RV901 2.2M
R913 1.2M
R914 3.3M
R915 3.3M
R916 1.5M
R917 1M
CP901 (1/4)
BRIGHT
C912 1000p 500V
C913 0.022 F
W901
0 G1
H1
H2
PICTURE TUBE V901 M01JVV47WB
G1 G2 G3 HV
CRT901 PICTURE TUBE SOCKET
C916 0.022 B
C918 1.0 F
C915 1 50V
H FREQ
R929 1500
C917 47 6.3V TA
R921 33
R931 1M
R919 100k
R920 470k
IC901 AN2512S H.V OSC
IC901 AN2512S-T1
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V.OUT
V.OSC
TH901 500
R925 47k
C919 0.1 35V TA
R926 120k
R922 1800
R923 100
R924 3.9
CP901 (1/4)
V SIZE
CN902 (WHT)
DV1
DV2
CN901 (RED)
DH2
DH1
DEFLECTION YORK (DY)
W905 (WHT)
EVF 5V
TALLY
D903 GL1HD51TE84L
D902 GL3PR8
LD-17 BOARD
no mark : CAMERA REC mode

CP901


CP901
470
47K
2200
1M
V SIZE ADJ
H FREQ ADJ
CONTRAST ADJ
BRIGHT ADJ

- Signal path

| | VIDEO Signal | | | AUDIO Signal |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | | | | |
| PB | | ⇨ | | |

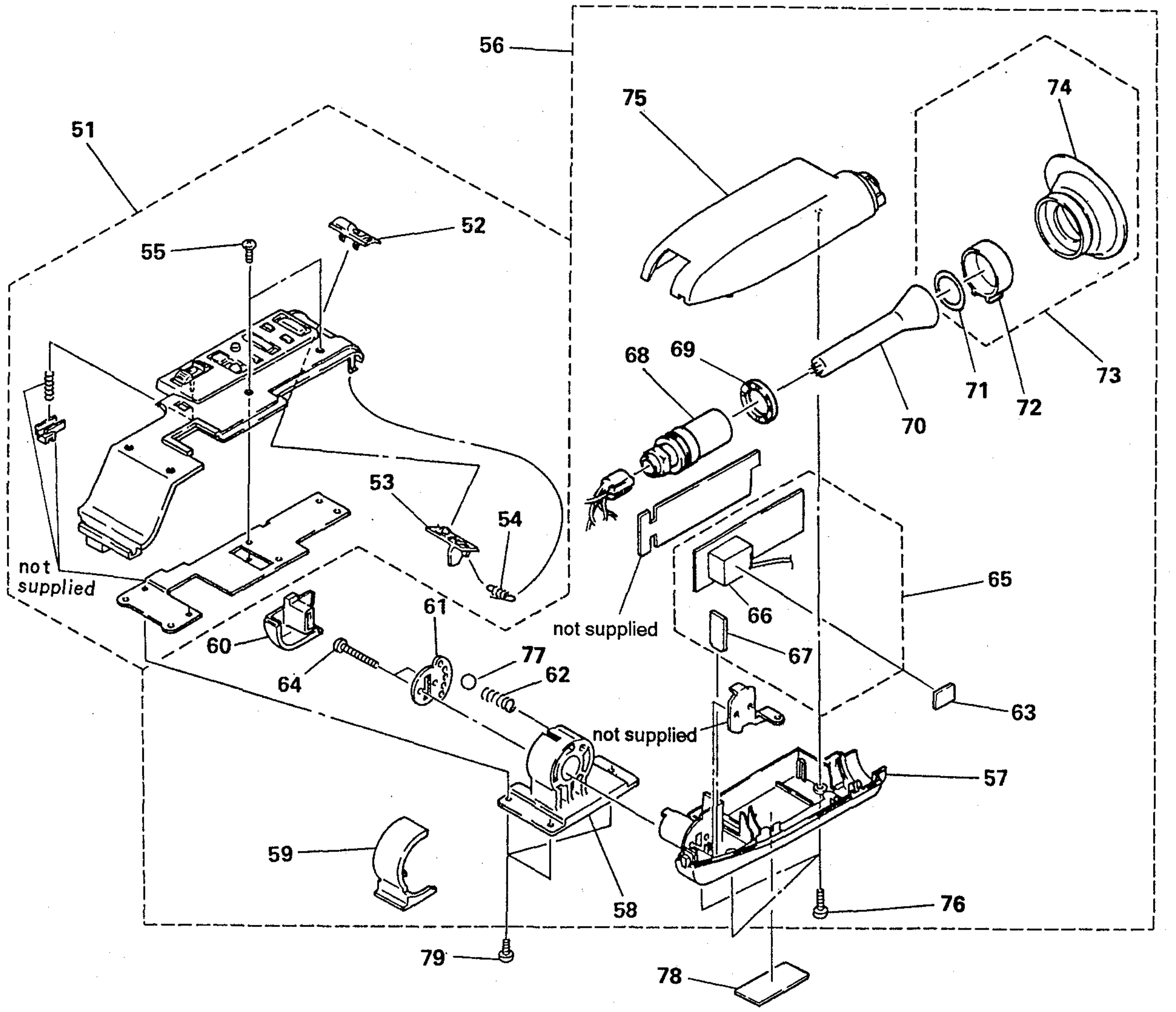
## EXPLODED VIEWS

NOTE:
- –XX, –X mean standardized parts, so they may have some differences from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
*Replace only with part number specified.*

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

### CABINET (UPPER), EVF ASSEMBLY



| No. | Part No. | Description | Remark |
|---|---|---|---|
| 51 | X-3732-950-2 | CABINET (UPPER) ASSY (CCD-F35/F280) | 52-55 |
|  | X-3732-971-1 | CABINET (UPPER) ASSY (CCD-F36) | 52-55 |
| 52 | 3-732-919-01 | BUTTON, EJECT (CCD-F35/F280) |  |
|  | 3-732-919-21 | BUTTON, EJECT (CCD-F36) |  |
| 53 | 3-732-920-01 | LOCK, EJECT |  |
| 54 | 3-669-440-00 | SPRING, TENSION |  |
| 55 | 3-719-381-01 | SCREW (M2X4) |  |
| 56 | A-7019-151-A | EVF COMPLETE ASSY (CCD-F35/F36) | 57-77 |
|  | A-7019-152-A | EVF COMPLETE ASSY (CCD-F280) | 57-62, 64-77 |
| 57 | X-3732-911-1 | CABINET (LOWER) ASSY, EVF |  |
| 58 | *3-732-944-01 | BEARING, EVF |  |
| 59 | 3-732-950-01 | BLIND, EVF |  |
| 60 | 3-732-949-01 | BLIND, EVF CABINET (LOWER) |  |
| 61 | 3-732-947-01 | PLATE, LOCK |  |
| 62 | 3-732-946-01 | SPRING, COMPRESSION |  |
| 63 | 3-704-233-01 | LABEL, CAUTION, HIGH VOLTAGE |  |
| 64 | 3-732-987-01 | SCREW (M2X20), +P |  |
| 65 | *A-7061-558-A | VF-22 BOARD, COMPLETE | 66, 67 |
| 66 | ⚠.1-439-428-11 | TRANSFORMER ASSY, FLYBACK (T901) |  |
| 67 | *1-630-067-11 | LD-17 BOARD |  |
| 68 | 1-451-310-21 | DEFLECTION YOKE (B/W) |  |
| 69 | 3-724-549-01 | LOCK, CRT |  |
| 70 | ⚠.1-546-065-11 | CATHODE-RAY TUBE, B/W |  |
| 71 | 3-724-570-01 | RING, CRT FIXED |  |
| 72 | X-3724-509-1 | HOLDER ASSY, CRT |  |
| 73 | A-7080-715-A | HOLDER BLOCK ASSY, FINDER | 74 |
| 74 | 3-733-922-01 | EYE CUP |  |
| 75 | 3-732-948-01 | CABINET (UPPER), EVF |  |
| 76 | 3-713-790-31 | SCREW (M2X8), TAPPING, P3 |  |
| 77 | 7-671-156-01 | BALL, STAINLESS |  |
| 78 | *3-703-845-01 | LABEL (N) (U/C), MAIN CAUTION (CCD-F35/F36) |  |
| 79 | 3-732-988-01 | SCREW (M2X2.5) |  |

---

VF-22 LD-13

## ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include *the board name.*

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- –XX, –X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE : Metal Oxide-film resistor
  F : nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, U : μ, for example:
  UA...: μA..., UPA...: μPA...,
  UPB...: μPB..., UPC...: μPC...,
  UPD...: μPD...
- CAPACITORS
  MF : μF, PF : μμF
- COILS
  MMH : mH, UH : μH

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
|  | *A-7061-558-A | VF-22 BOARD, COMPLETE<br>********************** |  |
|  |  | CAPACITOR |  |
| C901 | 1-126-369-11 | ELECT 220MF 20% 6.3V |  |
| C902 | 1-163-038-00 | CERAMIC CHIP 0.1MF 25V |  |
| C904 | 1-127-486-11 | ELECT(SOLID) 47MF 20% 6.3V |  |
| C905 | 1-163-009-11 | CERAMIC CHIP 0.001MF 10% 50V |  |
| C906 | 1-163-115-00 | CERAMIC CHIP 82PF 5% 50V |  |
| C907 | ⚠.1-162-625-11 | CERAMIC CHIP 0.0047MF 5% 50V |  |
| C908 | ⚠.1-163-015-00 | CERAMIC CHIP 0.0033MF 10% 50V |  |
| C909 | 1-126-193-11 | ELECT CHIP 1MF 20% 50V |  |
| C911 | 1-131-388-00 | TANTALUM 68MF 10% 3.15V |  |
| C912 | 1-102-038-00 | CERAMIC 0.001MF 500V |  |
| C913 | 1-163-033-00 | CERAMIC CHIP 0.022MF 50V |  |
| C915 | 1-126-193-11 | ELECT CHIP 1MF 20% 50V |  |
| C916 | 1-163-037-11 | CERAMIC CHIP 0.022MF 10% 25V |  |
| C917 | 1-135-166-21 | TANTAL. CHIP 47MF 20% 6.3V |  |
| C918 | 1-162-638-11 | CERAMIC CHIP 1MF 16V |  |
| C919 | 1-135-070-00 | TANTAL. CHIP 0.1MF 10% 35V |  |
| C920 | 1-163-021-00 | CERAMIC CHIP 0.01MF 10% 50V |  |
|  |  | CONNECTOR |  |
| CN901 | *1-566-195-21 | PIN, CONNECTOR (PC BOARD) 2P |  |
| CN902 | *1-566-195-11 | PIN, CONNECTOR (PC BOARD) 2P |  |
| CN904 | *1-566-759-11 | PIN, CONNECTOR (PC BOARD) 4P |  |
|  |  | CONPOSITION CIRCUIT BLOCK |  |
| CP901 | 1-238-119-11 | RES, ADJ |  |
|  |  | SOCKET ASSY |  |
| CRT901 | 1-526-978-21 | SOCKET ASSY, CRT |  |
|  |  | DIODE |  |
| D903 | 8-719-400-20 | DIODE MA152WA |  |
|  |  | IC |  |
| IC901 | 8-759-420-01 | IC AN2512S |  |
|  |  | COIL |  |
| L901 | 1-408-421-00 | INDUCTOR 100UH |  |
| L902 | 1-410-379-21 | INDUCTOR CHIP 6.8UH |  |
| L903 | ⚠.1-459-858-11 | COIL, FERRITE (HLC) |  |
|  |  | TRANSISTOR |  |
| Q902 | 8-729-402-31 | TRANSISTOR 2SD1819A-Q |  |
| Q903 | 8-729-106-68 | TRANSISTOR 2SD1615A-GP |  |
| Q904 | 8-729-216-32 | TRANSISTOR 2SA1163 |  |
|  |  | RESISTOR |  |
| R902 | 1-216-051-00 | METAL GLAZE 1.2K 5% 1/10W |  |
| R903 | 1-216-041-00 | METAL GLAZE 470 5% 1/10W |  |
| R904 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W |  |
| R906 | 1-216-051-00 | METAL GLAZE 1.2K 5% 1/10W |  |
| R907 | 1-216-063-00 | METAL GLAZE 3.9K 5% 1/10W |  |
| R908 | 1-216-063-00 | METAL GLAZE 3.9K 5% 1/10W |  |
| R909 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W |  |
| R911 | 1-216-081-00 | METAL GLAZE 22K 5% 1/10W |  |
| R912 | 1-216-121-00 | METAL GLAZE 1M 5% 1/10W |  |
| R913 | 1-216-123-11 | METAL GLAZE 1.2M 5% 1/10W |  |
| R914 | 1-216-133-00 | METAL GLAZE 3.3M 5% 1/10W |  |
| R915 | 1-216-133-00 | METAL GLAZE 3.3M 5% 1/10W |  |
| R916 | 1-216-125-00 | METAL GLAZE 1.5M 5% 1/10W |  |
| R917 | 1-216-121-00 | METAL GLAZE 1M 5% 1/10W |  |
| R919 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W |  |
| R920 | 1-216-113-00 | METAL GLAZE 470K 5% 1/10W |  |
| R921 | 1-216-013-00 | METAL GLAZE 33 5% 1/10W |  |
| R922 | 1-216-055-00 | METAL GLAZE 1.8K 5% 1/10W |  |
| R923 | 1-216-025-00 | METAL GLAZE 100 5% 1/10W |  |
| R924 | 1-216-306-11 | METAL GLAZE 3.9 5% 1/10W |  |
| R925 | 1-216-336-11 | METAL GLAZE 47K 1% 1/10W |  |
| R926 | 1-218-163-11 | METAL GLAZE 120K 1% 1/10W |  |
| R928 | 1-216-870-11 | METAL GLAZE 180K 1% 1/10W |  |
| R929 | 1-216-053-00 | METAL GLAZE 1.5K 5% 1/10W |  |
| R930 | 1-216-089-00 | METAL GLAZE 47K 5% 1/10W |  |
| R931 | 1-216-121-00 | METAL GLAZE 1M 5% 1/10W |  |
|  |  | VARIABLE RESISTOR |  |
| RV901 | 1-230-203-00 | RES, ADJ, METAL GLAZE 2.2M |  |
|  |  | TRANSFORMER |  |
| T901 | ⚠.1-439-428-11 | TRANSFORMER ASSY, FLYBACK |  |
|  |  | THERMISTOR |  |
| TH901 | 1-807-938-11 | THERMISTOR |  |
| ************ | ************ | ************************************ | ******** |
|  | *1-630-067-11 | LD-17 BOARD<br>************ |  |
|  | *3-674-372-00 | HOLDER (A), LED |  |
|  |  | DIODE |  |
| D902 | 8-719-812-41 | DIODE TLR124 |  |
| D903 | 8-719-941-34 | DIODE GL1HD51 |  |
| ************ | ************ | ************************************ | ******** |

# CAMERA ADJUSTMENTS

## 1-1. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT

### 1-1-1. Horizontal Tilt Adjustment

| Mode | Playback |
|---|---|
| Signal | Alignment tape for checking operation<br>(WR5-5NSP)<br>Monoscope portion |
| Specified Value | See Fig. 1-2. |

Adjustment method:

1) Adjust the volume dumbbell Ⓓ (BRIGHT) for appropriate brightness on CRT screen. (See Fig. 1-3.)
2) Loosen the DY (deflection yoke) tightening nut. (See Fig. 1-1.)
3) Make a picture horizontal by turning the DY.
4) Retighten the nut. (Do not tighten excessively.)

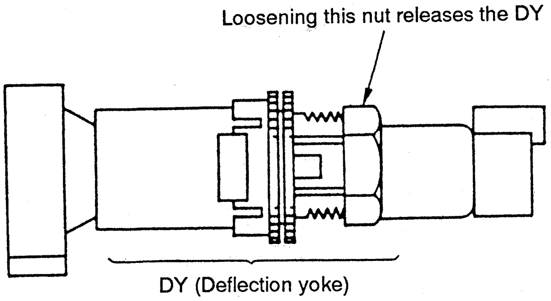
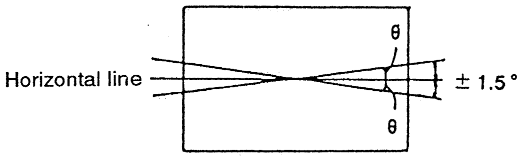
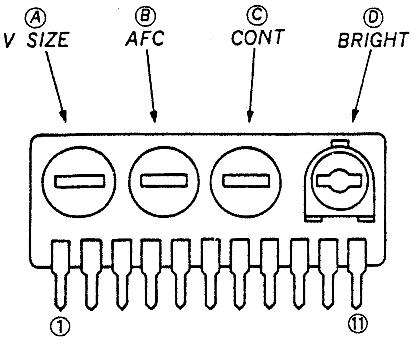


Fig. 1-1.



Specified value: Image orientation within ± 1.5 ° of horizontal line.

Fig. 1-2.



Volume dumbbell (CP901)

Fig. 1-3.

### 1-1-2. Centering Adjustment

| Mode | Playback |
|---|---|
| Signal | Alignment tape for checking operation<br>(WR5-5NSP)<br>Monoscope portion |
| Specified Value | See Fig. 1-5. |

Adjustment method:

1) Turn the centering adjustment rings to provide an image with even right, left, upper and lower margins. (See Fig. 1-4.)

**Note:** Since the centering position is affected by the earth magnetism, turn the equipment over 360 ° horizontally, and make adjustments at the orientation which exhibits median displacements of the image.

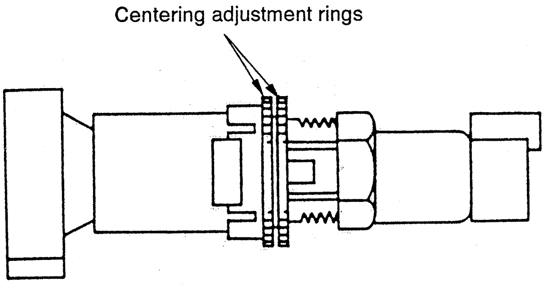


Fig. 1-4.

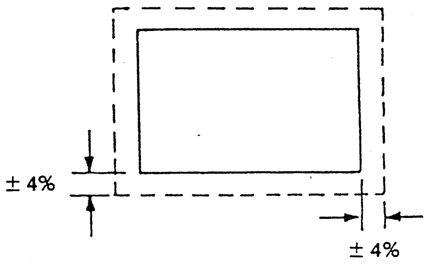


Fig. 1-5.

### 1-1-3. AFC Adjustment (VF-22 Board)

| Mode | E-E or Camera standby |
|---|---|
| Signal | Color bar |
| Measurement Point | C915 ⊕ side |
| Measuring Instrument | Digital voltmeter or oscilloscope (DC range) |
| Adjustment Element | Volume dumbbell Ⓑ (AFC) |
| Specified Value | 2.6 ± 0.2 Vdc |

Adjustment method:

1) Adjust volume dumbbell Ⓑ (AFC) for 2.6 ± 0.2 Vdc. (See Fig. 1-3.)

### 1-1-4. Horizontal Amplitude Adjustment (VF-22 Board)

| Mode | Playback |
|---|---|
| Signal | Alignment tape for checking operation<br>(WR5-5NSP)<br>Monoscope portion |
| Adjustment Element | C905 |
| Specified Value | 6 ± 3% |

Adjustment method:

1) Line up the upper and lower sections of the monoscope image with the upper and lower edges of the screen by rotating volume dumbbell Ⓐ (V SIZE). (See Fig. 1-3.)
2) Rotate volume dumbbell Ⓓ (CONT) to set the brightness to the normal level.
3) Short or open the pattern $\boxed{A}$ of the H size adjustment capacitor (C905) to provide horizontal overscans of 6 ± 3% (total of left and right). (See Fig. 1-7.)

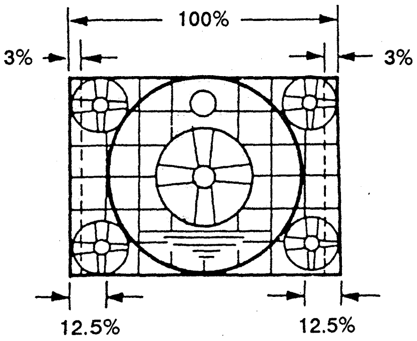
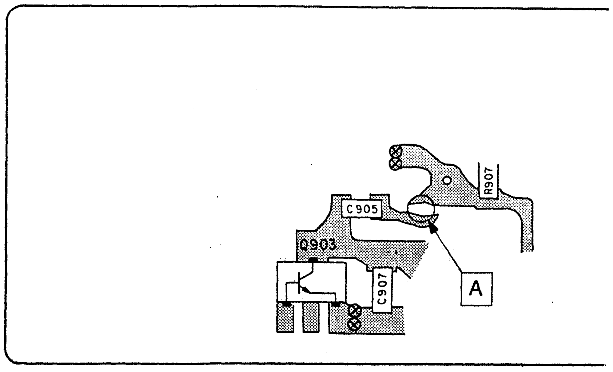


Fig. 1-6.



VF-22 Board (component side)

| A section | H size |
|---|---|
| Open | Large |
| Short | Small |

Fig. 1-7.

### 1-1-5. Vertical Amplitude Adjustment (VF-22 Board)

| Mode | Playback |
|---|---|
| Signal | Alignment tape for checking operation<br>(WR5-5NSP)<br>Monoscope portion |
| Adjustment Element | Volume dumbbell Ⓐ (V SIZE) |
| Specified Value | 6 ± 3% |

Adjustment method:

1) By turning volume dumbbell Ⓐ (V SIZE), adjust vertical overscan to 6 ± 3% (upper and lower total). (See Fig. 1-3.)

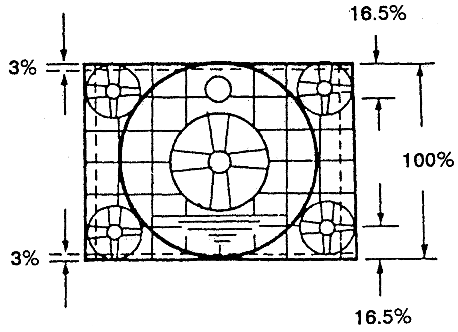


Fig. 1-8.

### 1-1-6. Brightness, Contrast Adjustments (VF-22 Board)

| Mode | Playback |
|---|---|
| Signal | Alignment tape for checking operation<br>(WR5-5NSP)<br>Monoscope portion |
| Adjustment Element | Brightness:<br>Volume dumbbell Ⓓ (BRIGHT)<br>Contrast:<br>Volume dumbbell Ⓒ (CONT) |

Adjustment method:

1) Adjust volume dumbbel Ⓓ (BRIGHT) and Ⓒ (CONT) alternately until the bright and dark areas of a gray scale are displayed correctly. (The bright areas should not be made too bright to avoid a fuzzy display of the cross-hatches in the monoscope circle, and the brightness of the dark areas should be such that discrimination between the darkest and second darkest area is possible.) (See Fig. 1-3.)

### 1-1-7. Focus Adjustment (VF-22 board)

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape for checking operation (WR5-5NSP)<br>Monoscope portion |
| Adjustment Element | RV901 |

Adjustment method:

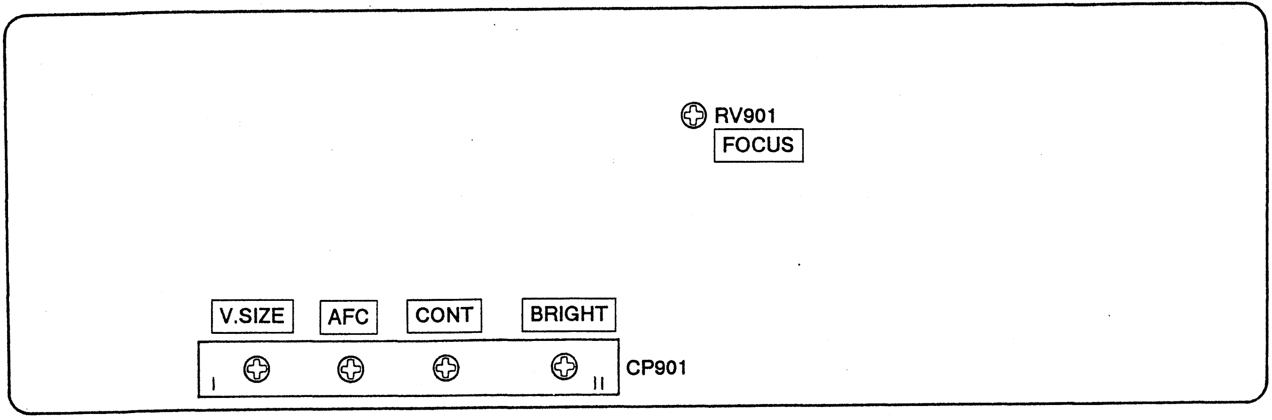
1) Adjust for optimum focus using RV901.

### 1-1-8. Horizontal Amplitude, Vertical Amplitude and Focus Checks

Values should conform to specifications given in 1-1-4. Horizontal Amplitude Adjustment and 1-1-5. Vertical Amplitude Adjustment. If not, readjust accordingly, and repeat 1-1-6. Brightness, Contrast Adjustments. In this case, focus needs to be checked. If the image is not clear, perform 1-1-7. Focus Adjustment.

## 1-2. ADJUSTMENT ELEMENTS LOCATION

**VF-22 BOARD (COMPONENT SIDE)**



## CORRECTION

Service manual: Page 195

☛:corrected portion

### ACCESSORIES AND PACKING MATERIALS

| Part No. | Description | Remark |
|---|---|---|
| *3-340-514-01 | BAG, PROTECTION | |
| *3-732-952-01 | CUSHION (UPPER) | |
| *3-732-953-01 | CUSHION (LOWER) | |
| 3-786-788-21 | MANUAL, INSTRUCTION<br>(ENGLISH, FRENCH, SPANISH) (CCD-F35) | |
| 3-786-788-81 | MANUAL, INSTRUCTION<br>(ENGLISH, FRENCH, SPANISH) (CCD-F280) ☚ | |
| 3-786-788-91 | MANUAL, INSTRUCTION<br>(ENGLISH, FRENCH, SPANISH) (CCD-F36) ☚ | |

* * *

### ACCESSORIES AND PACKING MATERIALS(KIT)

| | |
|---|---|
| A-6767-701-A | RFU ADAPTOR RFU-89UCA (CCD-F35/F36) ☚ |
| A-6767-816-A | RFU ADAPTOR RFU-89NA (CCD-F280) ☚ |
| *3-733-937-01 | INDIVIDUAL CARTON (CCD-F35) |
| *3-733-937-11 | INDIVIDUAL CARTON (CCD-F36) |
| *3-733-937-61 | INDIVIDUAL CARTON (CCD-F280) |
| *1-571-163-11 | SWITCH, ANTENNA CHANGE (CABLE) |
| *3-733-938-01 | CUSHION, ACC |
| ** | AC ADAPTOR (AC-V30) |
| *** | BATTERY PACK (NP-55) |

** MARK PART IS AVAILABLE FOR REPAIR SERVICE

*** MARK PART IS AVAILABLE AS AN OPTIONAL ACCESSORY

9-972-764-81

Sony Corporation
Personal Video Group

English
89D0933-1
Printed in Japan

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Published by A/V Engineering Service Dept.

# CCD-F35/F36/F280

**SONY**
# SERVICE MANUAL

*US Model*
*CCD-F35/F36*
*Canadian Model*
*CCD-F35/F36*
*E Model*
*CCD-F280*

## SUPPLEMENT-2

File this supplement with the Service Manual.

Subject : Canadian model is added in CCD-F36.

- As Canadian model is added in CCD-F36, add and change the following parts.

☛ : added or changed portion.

Page. 168

| No. | Part No. | Description |
|---|---|---|
| 27 | *3-704-256-01 | LABEL, CAUTION (US MODEL (CCD-F35/F36)) |
| 31 | *3-704-367-01 | LABEL (US MODEL (CCD-F35/F36)) |

Page. 195 ACCESSORIES AND PACKING MATERIALS (KIT)

| Part No. | Description |
|---|---|
| 3-733-958-01 | BELT, CARRYING (Canadian MODEL (CCD-F35/F36)) |

**CORRECTION**

Page. 169
(INCORRECT)

| No. | Part No. | Description |
|---|---|---|
| 52 | *3-732-919-11 | BUTTON, EJECT (CCD-F36) |
| 56 | *A-7019-147-A | EVF COMPLETE ASSY (CCD-F36) |

⇩

(CORRECT)

| No. | Part No. | Description |
|---|---|---|
| 52 | 3-732-919-21 | BUTTON, EJECT (CCD-F36) |
| 56 | Deleted | |

English
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**Sony Corporation**
**Personal Video Group**

9-972-764-82

# CCD-F35/F36/F280

**SONY**

# SERVICE MANUAL

US Model
CCD-F35/F36
Canadian Model
CCD-F35/F36
E Model
CCD-F280

## SUPPLEMENT-3

File this supplement with the Service Manual.

Subject : CRT change of type B viewfinder
(CCD-F36/F280 only)

- CRT of type B viewfinder added in Supplement-2 is changed .
  CCD-F36 : Sirial No. 37001 and later.
  CCD-F280 : Sirial No. 35001 and later.
  According to this change, some parts mounted on VF-22 board are also changed.

- VF-22 board has already been changed from part number suffix -11 to -12.
  This Supplement-3 also contains it.

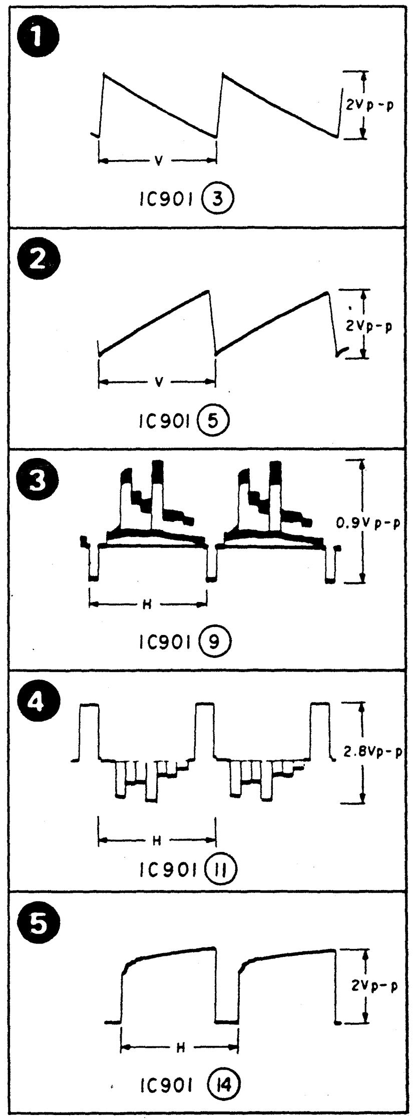
CORRECTION ☞ : corrected portion.
Page. 222
7-2-31. Auto-Focus Adjustment
Adjustment method :
4) When FHB> 0
D42=FHB+2
☞

## VF-22 (ELECTRONIC VIEW FIDER), LD-17 (TALLY LED) PRINTED WIRING BOARDS

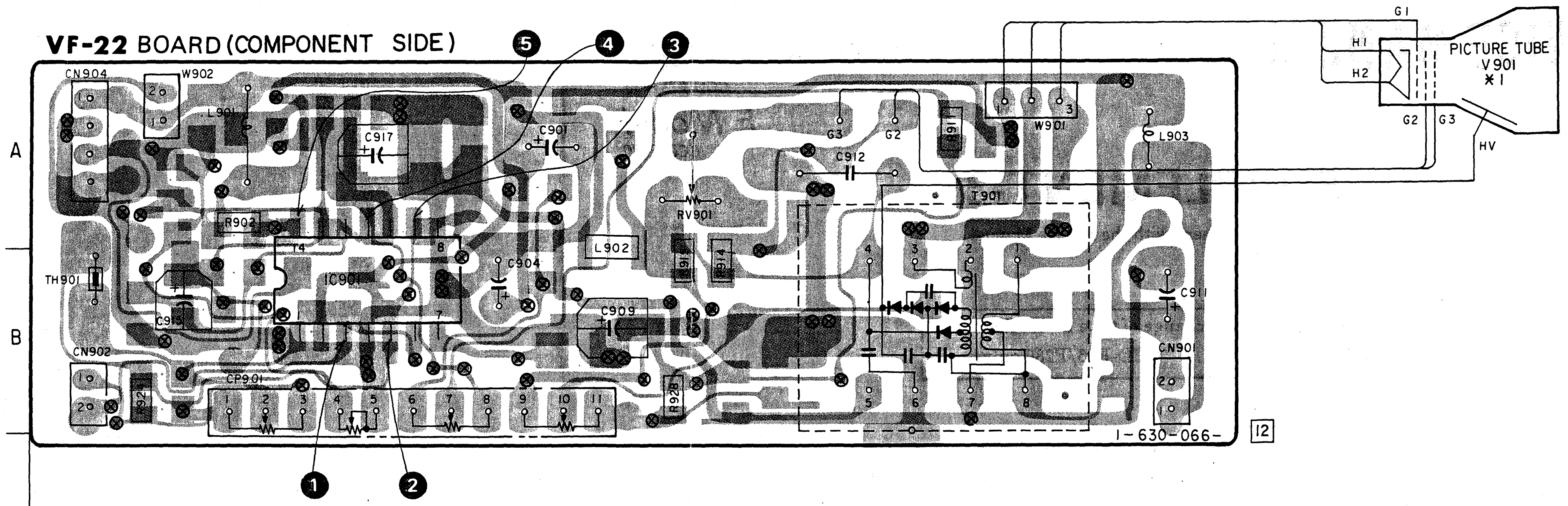
– Ref. No. VF-22, LD-17 BOARD : 6000 series –

| VF-22 BOARD | |
|---|---|
| D903 | D-6 |
| IC901 | B-2 |
| Q902 | A-1 |
| Q903 | E-2 |
| Q904 | E-6 |

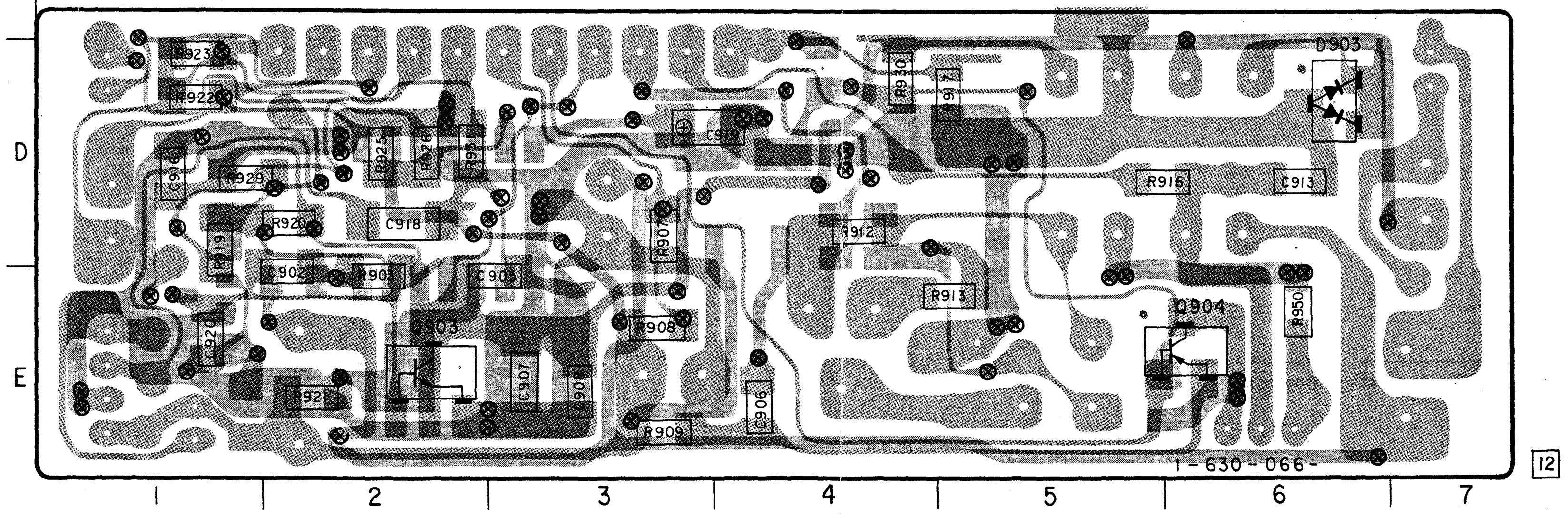
### VF-22 BOARD



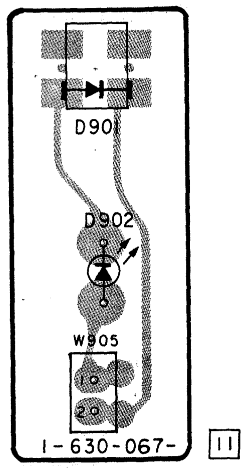
### VF-22 BOARD (COMPONENT SIDE)


❺
❹
❸
A
B
C
CN904
W902
L901
C917
C901
C912
G3
G2
W901
L903
R902
IC901
C904
L902
RV901
T901
TH901
C915
C909
C911
CN902
CP901
CN901
R928
1-630-066-
12
❶
❷
G1
H1
H2
PICTURE TUBE
V901
*1
G2
G3
HV

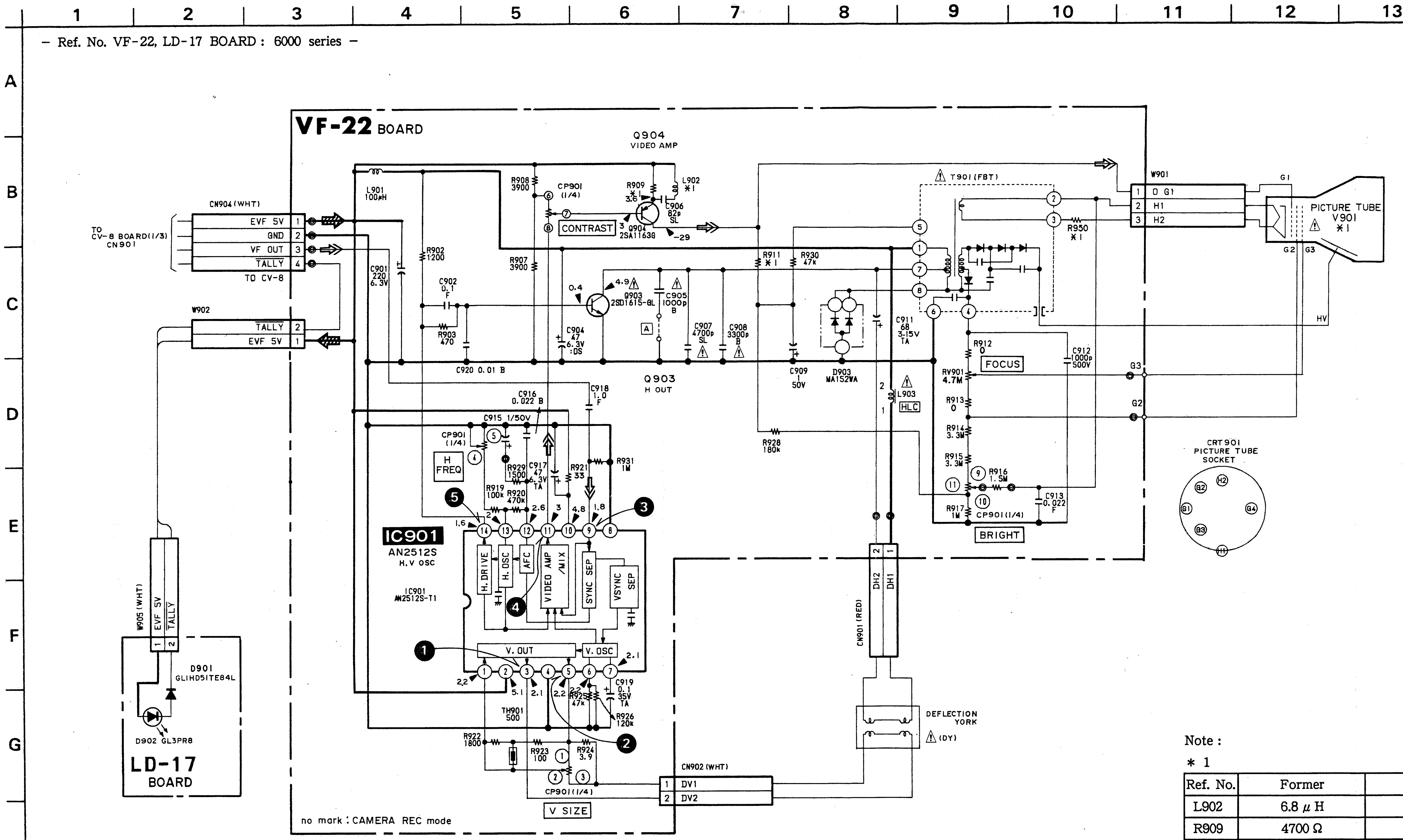
### VF-22 BOARD (CONDUCTOR SIDE)


D
E
R923
R922
D903
R930
R917
C919
C916
R929
R925
R926
R916
C913
R920
C918
R919
R912
C902
R903
C905
R907
R913
Q904
R950
C920
Q903
R908
R92
C907
C908
C906
R909
1-630-066-
12
1
2
3
4
5
6
7

### LD-17 BOARD


D901
D902
W905
1-630-067-
11

## VF-22 (ELECTRONIC VIEW FIDER), LD-17 (TALLY LED) SCHEMATIC DIAGRAMS


1
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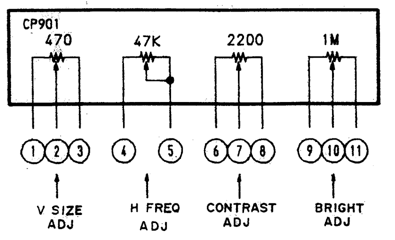
12
13
14
15
A
B
C
D
E
F
G
H
I
J
– Ref. No. VF-22, LD-17 BOARD : 6000 series –
VF-22 BOARD
Q904
VIDEO AMP
CN904 (WHT)
TO CV-8 BOARD(1/3) CN901
EVF 5V
GND
VF OUT
TALLY
TO CV-8
W902
TALLY
EVF 5V
L901 100µH
R908 3900
CP901 (1/4)
CONTRAST
R909 ※1 3.6
L902 ※1
C906 82p SL
Q904 2SA1163B
-29
C901 220 6.3V
R902 1200
C902 0.1 F
R903 470
R907 3900
0.4
4.9
Q903 2SD1615-BL
C905 1000p B
C904 47 6.3V :DS
C907 4700p SL
C908 3300p B
C920 0.01 B
Q903
H OUT
C916 0.022 B
C918 1.0 F
C915 1/50V
CP901 (1/4)
H FREQ
R929 1500
C917 47 6.3V TA
R921 33
R931 1M
R919 100k
R920 470k
IC901
AN2512S
H.V OSC
IC901 AN2512S-T1
H. DRIVE
H. OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V. OUT
V. OSC
TH901 500
R922 1800
R923 100
R924 3.9
R925 47k
R926 120k
C919 0.1 35V TA
CP901 (1/4)
V SIZE
no mark : CAMERA REC mode
CN902 (WHT)
DV1
DV2
T901 (FBT)
R911 ※1
R930 47k
C909 1 50V
D903 MA152WA
C911 68 3.15V TA
L903
HLC
R928 180k
R912 0
FOCUS
RV901 4.7M
R913 0
R914 3.3M
R915 3.3M
R916 1.5M
R917 1M
CP901 (1/4)
C913 0.022 F
C912 1000p 500V
BRIGHT
R950 ※1
W901
0 G1
H1
H2
G1
G2
G3
HV
PICTURE TUBE V901 ※1
CRT901 PICTURE TUBE SOCKET
DH2
DH1
CN901 (RED)
DEFLECTION YORK
(DY)
W905 (WHT)
EVF 5V
TALLY
D901 GL1HD51TE84L
D902 GL3PR8
LD-17 BOARD

CP901


CP901
470
47K
2200
1M
①②③
④
⑤
⑥⑦⑧
⑨⑩⑪
V SIZE ADJ
H FREQ ADJ
CONTRAST ADJ
BRIGHT ADJ

Note :

＊1

| Ref. No. | Former | New |
|---|---|---|
| L902 | 6.8 µH | 22 µH |
| R909 | 4700 Ω | 3300 Ω |
| R911 | 22k Ω | 18k Ω |
| R950 | 0 Ω | 6.8 Ω |
| V901 | M01JVV47WB | M01KGG007WB |

- Signal path

|  | VIDEO Signal |  |  | AUDIO Signal |
|---|---|---|---|---|
|  | CHROMA | Y | Y/CHROMA |  |
| REC |  |  |  |  |
| PB |  | ⇨ |  |  |

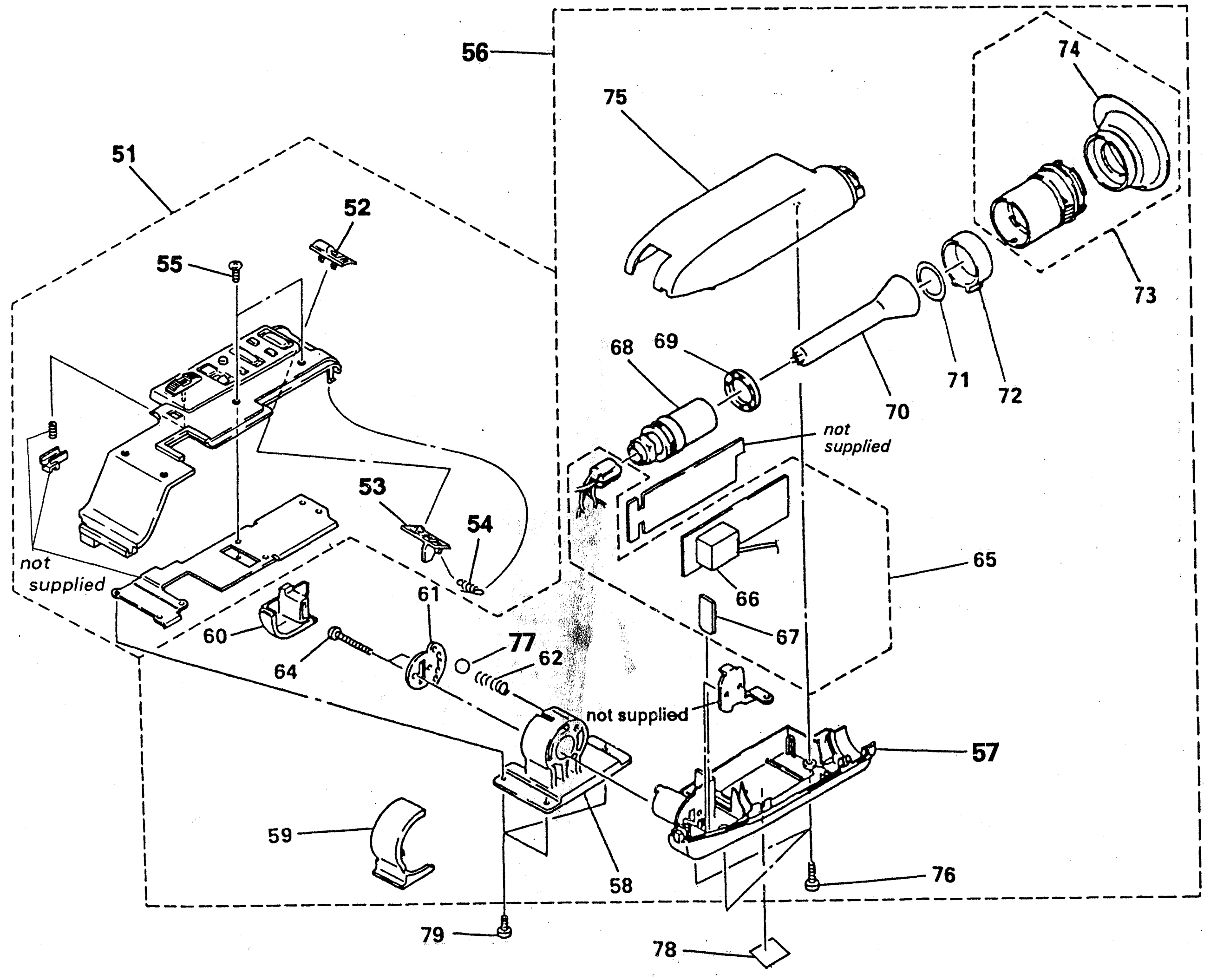
## SECTION 5
## EXPLODED VIEWS

NOTE:
- –XX, –X mean standardized parts, so they may have some differences from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

### CABINET (UPPER), EVF ASSEMBLY (TYPE B)



| No. | Part No. | Description | Remark |
|---|---|---|---|
| 51 | X-3732-950-2 | CABINET (UPPER) ASSY (CCD-F35/F280) | 52-55 |
| | X-3732-971-1 | CABINET (UPPER) ASSY (CCD-F36) | 52-55 |
| 52 | 3-732-919-01 | BUTTON, EJECT (CCD-F35/F280) | |
| | 3-732-919-21 | BUTTON, EJECT (CCD-F36) | |
| 53 | 3-732-920-01 | LOCK, EJECT | |
| 54 | 3-669-440-00 | SPRING, TENSION | |
| 55 | 3-719-381-01 | SCREW (M2X4) | |
| 56 | A-7019-151-A | EVF COMPLETE ASSY (FORMER TYPE) | 57-62<br>64-77 |
| | A-7019-151-B | EVF COMPLETE ASSY (NEW TYPE) | 57-62<br>64-77 |
| 57 | X-3732-911-1 | CABINET (LOWER) ASSY, EVF | |
| 58 | *3-732-944-01 | BEARING, EVF | |
| 59 | 3-732-950-01 | BLIND, EVF | |
| 60 | 3-732-949-01 | BLIND, EVF CABINET (LOWER) | |
| 61 | 3-732-947-01 | PLATE, LOCK | |
| 62 | 3-732-946-01 | SPRING, COMPRESSION | |
| 64 | 3-732-987-01 | SCREW (M2X20), +P | |

| No. | Part No. | Description | Remark |
|---|---|---|---|
| 65 | *A-7061-558-A | VF-22 BOARD, COMPLETE(FORMER TYPE) | 66, 67 |
| | *A-7061-558-B | VF-22 BOARD, COMPLETE (NEW TYPE) | 66, 67 |
| 66 | ⚠.1-439-428-11 | TRANSFORMER ASSY, FLYBACK (T901) | |
| 67 | *1-630-067-11 | LD-17 BOARD | |
| 68 | 1-451-310-21 | DEFIECTION YOKE (B/W) | |
| 69 | 3-724-549-01 | LOCK, CRT | |
| 70 | ⚠.1-546-065-11 | CATHODE-RAY TUBE, B/W (FORMER TYPE) | |
| | ⚠.1-546-085-11 | CATHODE-RAY TUBE, B/W (NEW TYPE) | |
| 71 | 3-724-570-01 | RING, CRT FIXED | |
| 72 | X-3724-509-1 | HOLDER ASSY, CRT | |
| 73 | A-7080-715-A | HOLDER BLOCK ASSY, FINDER | 74 |
| 74 | 3-733-922-01 | EYE CUP | |
| 75 | 3-732-948-01 | CABINET (UPPER), EVF | |
| 76 | 3-713-790-31 | SCREW (M2X8), TAPPING, P3 | |
| 77 | 7-671-156-01 | BALL, STAINLESS | |
| 78 | 3-703-845-01 | LABEL (N) (U/C), MAIN CAUTION (CCD-F35/F36) | |
| 79 | 3-732-988-01 | SCREW (M2X2.5) | |

## VF-22 LD-17

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| | *A-7061-558-A | VF-22 BOARD, COMPLETE (FORMER TYPE)<br>********************* | (Ref.No 6,000 Series) |
| | *A-7061-558-B | VF-22 BOARD, COMPLETE (NEW TYPE)<br>********************* | (Ref.No 6,000 Series) |
| | | CAPACITOR | |
| C901 | 1-126-369-11 | ELECT 220MF 20% | 6.3V |
| C902 | 1-163-038-00 | CERAMIC CHIP 0.1MF | 25V |
| C904 | 1-127-515-11 | ELECT(SOLID) 47MF 20% | 6.3V |
| C905 | ⚠.1-163-009-11 | CERAMIC CHIP 0.001MF 10% | 50V |
| C906 | 1-163-115-00 | CERAMIC CHIP 82PF 5% | 50V |
| C907 | ⚠.1-162-625-11 | CERAMIC CHIP 0.0047MF 5% | 50V |
| C908 | ⚠.1-163-015-00 | CERAMIC CHIP 0.0033MF 10% | 50V |
| C909 | 1-126-193-11 | ELECT CHIP 1MF 20% | 50V |
| C911 | 1-131-388-00 | TANTALUM 68MF 10% | 3.15V |
| C912 | 1-102-038-00 | CERAMIC 0.001MF | 500V |
| C913 | 1-163-033-00 | CERAMIC CHIP 0.022MF | 50V |
| C915 | 1-126-193-11 | ELECT CHIP 1MF 20% | 50V |
| C916 | 1-163-037-11 | CERAMIC CHIP 0.022MF 10% | 25V |
| C917 | 1-135-166-21 | TANTAL. CHIP 47MF 20% | 6.3V |
| C918 | 1-162-638-11 | CERAMIC CHIP 1MF | 16V |
| C919 | 1-135-070-00 | TANTAL. CHIP 0.1MF 10% | 35V |
| C920 | 1-164-232-11 | CERAMIC CHIP 0.01MF 10% | 50V |
| | | CONNECTOR | |
| CN901 | *1-566-195-21 | PIN, CONNECTOR (PC BOARD) 2P | |
| CN902 | *1-566-195-11 | PIN, CONNECTOR (PC BOARD) 2P | |
| CN904 | *1-566-759-11 | PIN, CONNECTOR (PC BOARD) 4P | |
| | | CONPOSITION CIRCUIT BLOCK | |
| CP901 | 1-238-119-11 | RES, ADJ | |
| | | SOCKET | |
| CRT901 | 1-526-978-21 | SOCKET ASSY, CRT | |
| | | DIODE | |
| D903 | 8-719-400-20 | DIODE MA152WA | |
| | | IC | |
| IC901 | 8-759-420-01 | IC AN2512S | |
| | | COIL | |
| L901 | 1-408-421-00 | INDUCTOR 100UH | |
| L902 | 1-410-379-21 | INDUCTOR CHIP 6.8UH (FORMER TYPE) | |
| L902 | 1-410-385-11 | INDUCTOR CHIP 22UH (NEW TYPE) | |
| L903 | ⚠.1-459-858-11 | COIL, FERRITE (HLC) | |
| | | TRANSISTOR | |
| Q902 | 8-729-402-31 | TRANSISTOR 2SD1819A-Q | |
| Q903 | ⚠.8-729-106-68 | TRANSISTOR 2SD1615A-GP | |
| Q904 | 8-729-216-32 | TRANSISTOR 2SA1163 | |
| | | RESISTOR | |
| R902 | 1-216-051-00 | METAL GLAZE 1.2K 5% 1/10W | |
| R903 | 1-216-041-00 | METAL GLAZE 470 5% 1/10W | |
| R904 | 1-216-073-00 | METAL GLAZE 10K 5% 1/10W | |
| R906 | 1-216-051-00 | METAL GLAZE 1.2K 5% 1/10W | |
| R907 | 1-216-063-00 | METAL GLAZE 3.9K 5% 1/10W | |
| R908 | 1-216-063-00 | METAL GLAZE 3.9K 5% 1/10W | |
| R909 | 1-216-065-00 | METAL GLAZE 4.7K 5% 1/10W (FORMER TYPE) | |
| R909 | 1-216-061-00 | METAL GLAZE 18K 5% 1/10W (NEW TYPE) | |
| R911 | 1-216-081-00 | METAL GLAZE 22K 5% 1/10W (FORMER TYPE) | |
| R911 | 1-216-079-00 | METAL GLAZE 3.3K 5% 1/10W (NEW TYPE) | |
| R912 | 1-216-295-00 | METAL GLAZE 0 5% 1/10W | |
| R913 | 1-216-295-00 | METAL GLAZE 0 5% 1/10W | |
| R914 | 1-216-133-00 | METAL GLAZE 3.3M 5% 1/10W | |
| R915 | 1-216-133-00 | METAL GLAZE 3.3M 5% 1/10W | |
| R916 | 1-216-125-00 | METAL GLAZE 1.5M 5% 1/10W | |
| R917 | 1-216-121-00 | METAL GLAZE 1M 5% 1/10W | |
| R919 | 1-216-097-00 | METAL GLAZE 100K 5% 1/10W | |
| R920 | 1-216-113-00 | METAL GLAZE 470K 5% 1/10W | |
| R921 | 1-216-013-00 | METAL GLAZE 33 5% 1/10W | |
| R922 | 1-216-055-00 | METAL GLAZE 1.8K 5% 1/10W | |
| R923 | 1-216-025-00 | METAL GLAZE 100 5% 1/10W | |
| R924 | 1-216-306-11 | METAL GLAZE 3.9 5% 1/10W | |
| R925 | 1-216-336-11 | METAL GLAZE 47K 1% 1/10W | |
| R926 | 1-218-163-11 | METAL GLAZE 120K 1% 1/10W | |
| R928 | 1-216-870-11 | METAL GLAZE 180K 1% 1/10W | |
| R929 | 1-216-053-00 | METAL GLAZE 1.5K 5% 1/10W | |
| R930 | 1-216-089-00 | METAL GLAZE 47K 5% 1/10W | |
| R931 | 1-216-121-00 | METAL GLAZE 1M 5% 1/10W | |
| R950 | 1-216-295-00 | METAL GLAZE 0 5% 1/10W (FORMER TYPE) | |
| R950 | 1-216-311-00 | METAL GLAZE 6.8 5% 1/10W (NEW TYPE) | |
| | | VARIABLE RESISTOR | |
| RV901 | 1-238-647-11 | RES, ADJ, METAL GLAZE 4.7M | |
| | | TRANSFORMER | |
| T901 | ⚠.1-439-428-11 | TRANSFORMER ASSY, FLYBACK | |
| | | THERMISTOR | |
| TH901 | 1-807-938-11 | THERMISTOR 500 | |

***************************************************************

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| | *1-630-067-11 | LD-17 BOARD<br>************ | (Ref.No 6,000 Series) |
| | *3-674-372-00 | HOLDER (A), LED | |
| | | DIODE | |
| D901 | 8-719-941-34 | DIODE GL1HD51 | |
| D902 | 8-719-812-41 | DIODE TLR124 | |

***************************************************************

| Ref.No | Part No. | Description | Remark |
|---|---|---|---|
| | | MISCELLANEOUS<br>************* | |
| | ⚠.1-451-310-21 | DEFLECTION YOKE (B/W) | |
| V901 | ⚠.1-452-482-11 | CRT ASSY (M91JYZ60WB) (VF-14 BOARD) | |
| V901 | ⚠.1-546-065-11 | CATHODE-RAY TUBE, B/W (M01JVV47WB) (FORMER TYPE) (VF-22 BOARD) | |
| V901 | ⚠.1-546-085-11 | CATHODE-RAY TUBE, B/W (M01KGG007WB) (NEW TYPE) (VF-22 BOARD) | |

***************************************************************

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

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90A1632-1
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Personal Video Group

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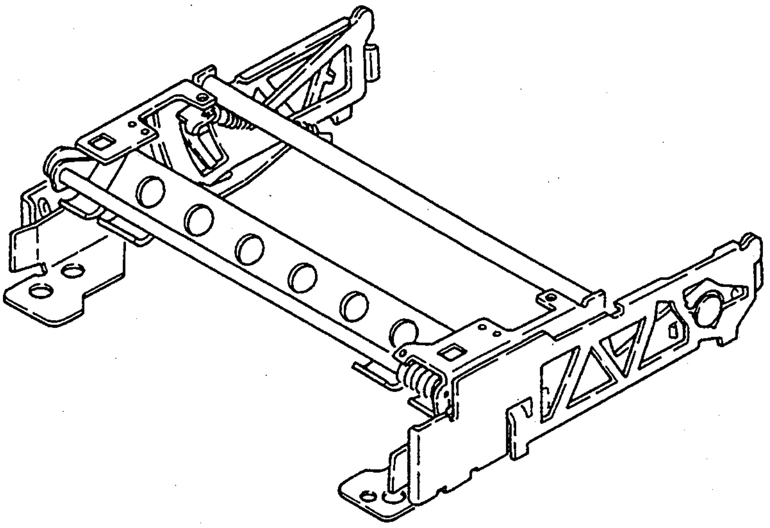
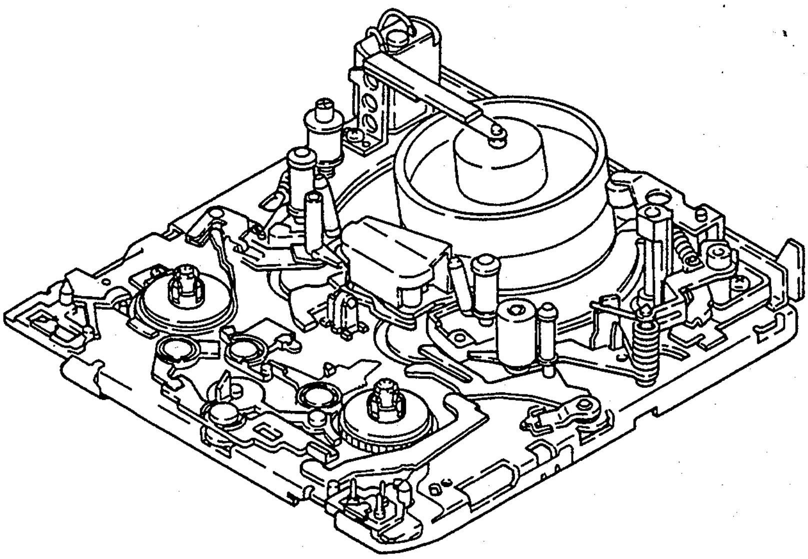
# 8mm Video MECHANICAL ADJUSTMENT MANUAL II

## U MECHANISM

**Video 8**

Please use in conjunction with the SERVICE MANUAL.





**8 MECHANISM DECK**

**SONY**®

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# 1. PREPARATIONS FOR MECHANICAL BLOCK CHECK, ADJUSTMENT AND REPLACEMENT

**Note:** For removal of the cabinet, the boards, the cassette compartment, etc., refer to the service guides.

## 1-1. OPERATION WITHOUT CASSETTE COMPARTMENT ASSEMBLY AND TAPE

**Note:** The unit will not work if exposed to a strong light.

### 1-1-1. How to Trigger the Loading Operation (See Fig. 1-1.)

1) Supply power to the unit after removing the cabinet, the camera block, the cassette compartment assembly, etc., as indicated in the service guides. (This will enable operation of the mechanical deck.)
2) Cover the LED assembly with an opaque cap, etc. ❶.
3) Attach a piece of tape to the RECOG switch ❷ so that the pin is held down.
4) Push the EJECT lever ❸ in the direction of the arrow Ⓐ.

### 1-1-2. Setting the Playback Mode (See Fig. 1-1.)

1) Follow the procedures in section 1-1-1. above.
2) Put the rubber band ❹ around the S and T reels.
3) Press the PLAY switch of unit, then push the tension regulator arm assembly ❺ in the direction of the arrow Ⓑ when the T reel starts to rotate (the tension regulator band will be released, and the S reel will start rotating).
4) To stop operation, press the STOP switch.

### 1-1-3. Eject Operation (See Fig. 1-1.)

1) To eject, turn the EJECT switch on.

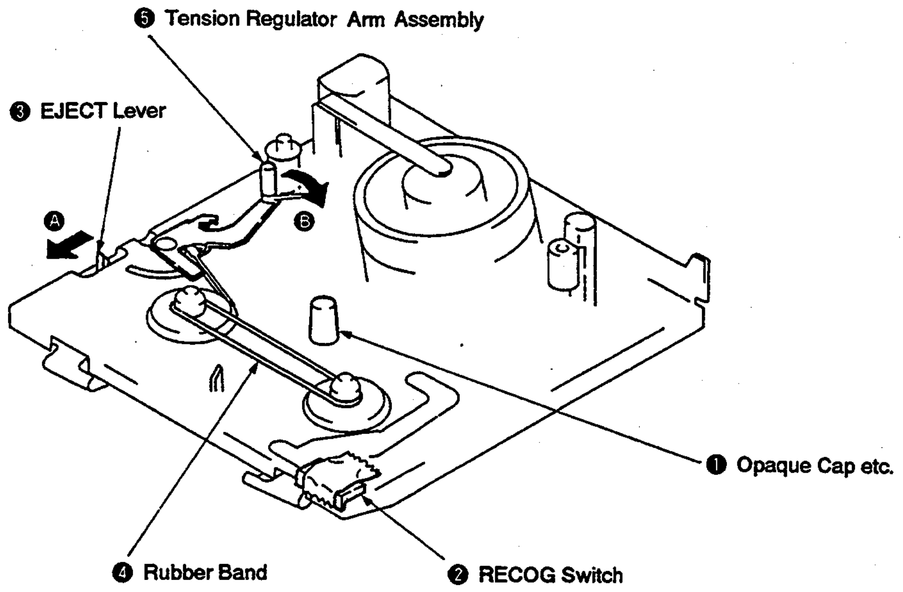


Fig. 1-1.

## 1-2. THE MODE SELECTOR

### 1-2-1. Name of Each Part (external) (See Fig. 1-2.)

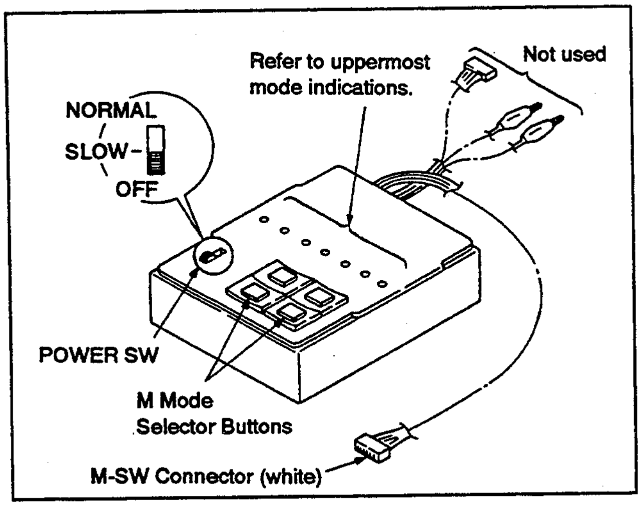

Refer to uppermost mode indications.
Not used
NORMAL
SLOW
OFF
POWER SW
M Mode Selector Buttons
M-SW Connector (white)

Fig. 1-2.

### 1-2-2. Connections (See Fig. 1-3.)

1) Mount the MODE SELECTOR III panel (Ref. No. J-9) ❶ onto the mode selector.
2) Attach the conversion connector (Ref. No. J-8) ❸ of MODE SELECTOR III to the 6-pin connector (white) ❷ of the mode selector M-SW.
3) Remove the FP-89 flexible board ❺ from the flexible connector ❹.
4) Attach the FP-89 flexible board ❺ to the flexible connector ❻ of the MODE SELECTOR III conversion connector ❸, then attach the 2-pin connector (white) ❽ of the loading motor to the 2-pin connector (white) ❼.

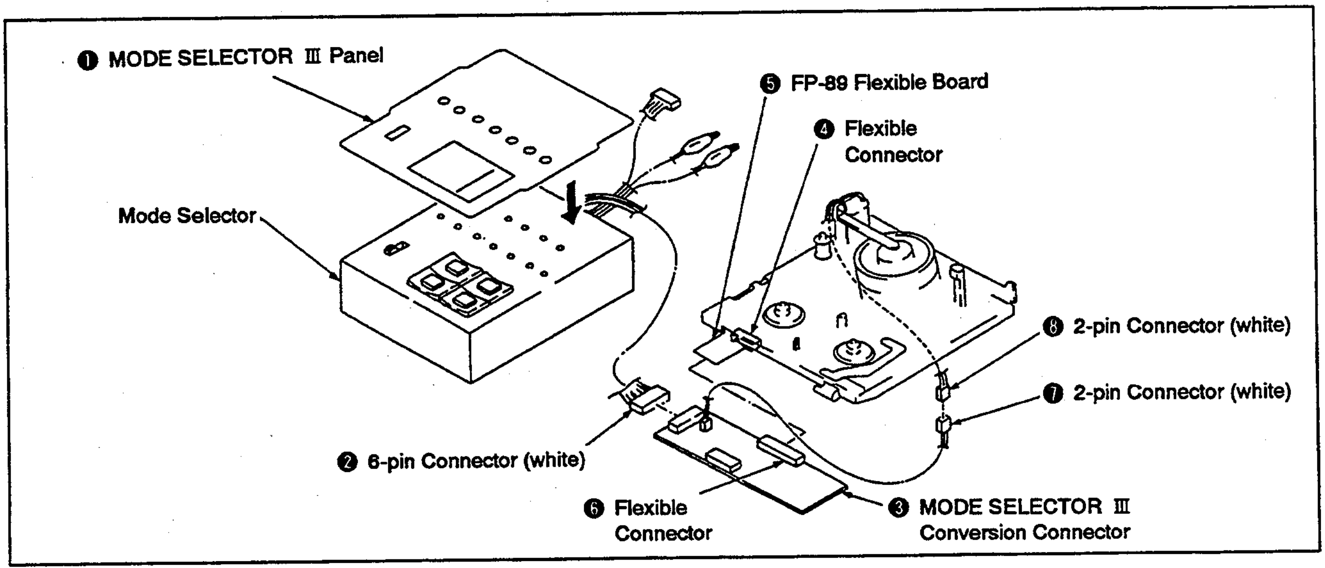

❶ MODE SELECTOR Ⅲ Panel
Mode Selector
❺ FP-89 Flexible Board
❹ Flexible Connector
❽ 2-pin Connector (white)
❼ 2-pin Connector (white)
❷ 6-pin Connector (white)
❻ Flexible Connector
❸ MODE SELECTOR Ⅲ Conversion Connector

Fig. 1-3.

### 1-2-3. Handling (See Figs. 1-2. and 1-4.)

- Use only the M mode selector buttons.
- Refer to mode indications on the uppermost part of the MODE SELECTOR III panel.
- If the right M mode selector button is kept pressed, the lit indication will change in the order of EJECT → (IA) → ULD → (IB) → STOP → (IC) → FWD.
- To change modes in the reverse direction (from FWD to EJECT), press the left selector button.

**Note:** For this U mechanism, the uppermost indicators on the MODE SELECTOR III panel are used. The IA, IB and IC indications light up during mode changes.

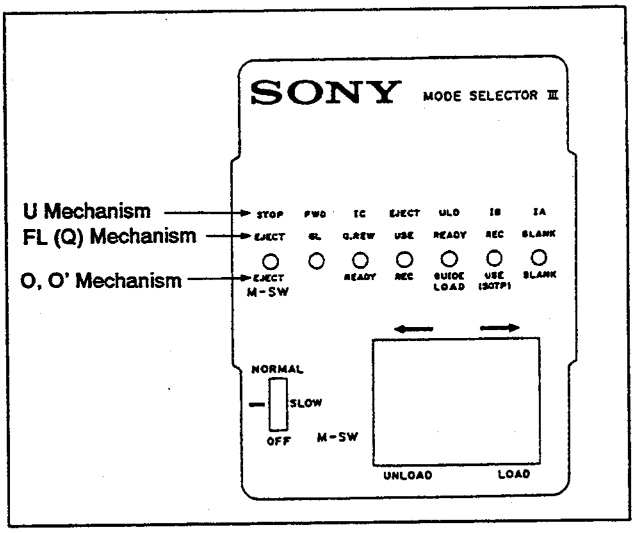

SONY MODE SELECTOR Ⅲ
U Mechanism
FL (Q) Mechanism
O, O' Mechanism
STOP
FWD
IC
EJECT
ULD
IB
IA
EJECT
SL
Q.REW
USE
READY
REC
BLANK
EJECT
READY
REC
GUIDE LOAD
USE (30TP)
BLANK
M-SW
NORMAL
SLOW
OFF
M-SW
UNLOAD
LOAD

Fig. 1-4.

# 2. PERIODICAL CHECK AND MAINTENANCE (See Fig. 2-1.)

The following periodical check and maintenance procedures are necessary to ensure proper operation and to protect the tapes as well as the unit, and the following maintenance procedures must be always carried out after repairing regardless of how long the unit has been used.

## 2-1. ROTARY DRUM ASSEMBLY CLEANING

1) While pressing a piece of chamois leather (Ref. No. J-2) moistened in cleaning fluid (Ref. No. J-1) lightly against the rotary drum, turn the rotary upper drum slowly counter-clockwise with your fingers.

**Note:** Do not drive the drum with the motor, and do not turn it clockwise.
Do not move the chamois leather vertically against the head tip; this can damage the head tip. Strictly follow the cleaning instructions above.

## 2-2. TAPE PATH CLEANING

1) Set the cassette compartment assembly to the eject state, or remove it. Then clean the tape path (guides No. 1 to 7, capstan shaft, pinch rollers) with a piece of chamois leather moistened in cleaning fluid (See Fig. 2-1).

## 2-3. DRIVE SYSTEM CLEANING

1) Clean the drive system (timing belt, reel table surface) with a piece of cloth moistened in cleaning fluid.

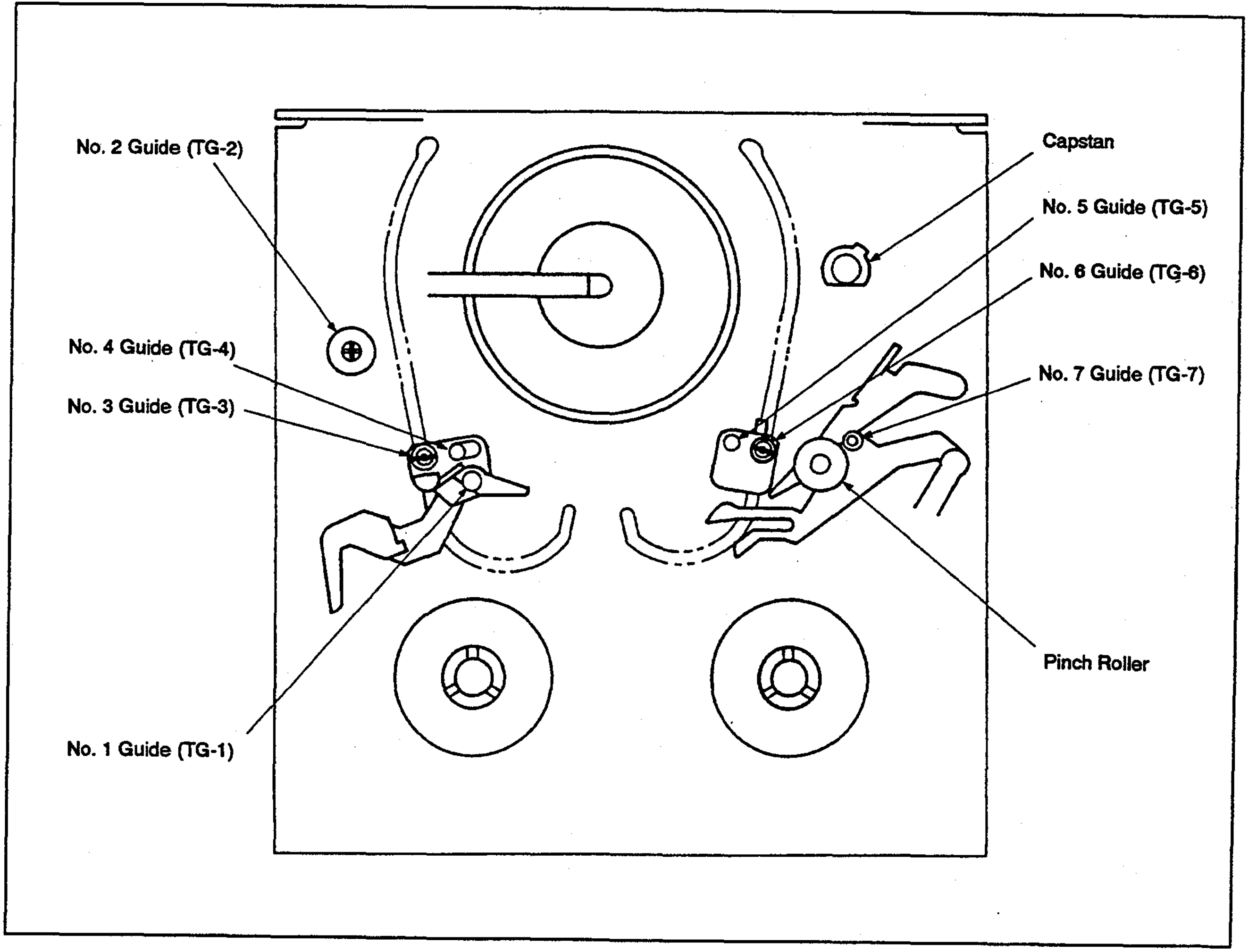


Fig. 2-1.

## 2-4. PERIODICAL CHECK ITEMS

○Cleaning ◎Lubrication ☆Check

| Maintenance and Check Item | | Operation time (H) | | | | | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 500 | 1,000 | 1,500 | 2,000 | 2,500 | 3,000 | 3,500 | 4,000 | 4,500 | 5,000 | |
| Cleaning and Demagnetizing | Tape path surfaces Cleaning | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Do not oil. |
| | Rotary drum assembly cleaning and demagnetizing | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Do not oil. |
| Drive System | Relay belt (short) | – | ☆ | – | ☆ | – | ☆ | – | ☆ | – | ☆ | 3-728-866-01 |
| | Relay belt (long) | – | ☆ | – | ☆ | – | ☆ | – | ☆ | – | ☆ | 3-728-865-01 |
| | Capstan shaft | – | ◎ | – | ◎ | – | ◎ | – | ◎ | – | ◎ | Take care that no oil gets on tape path surfaces. |
| | Idler pulley axle | – | ◎ | – | ◎ | – | ◎ | – | ◎ | – | ◎ | |
| | Loading motor | – | ☆ | – | ☆ | – | ☆ | – | ☆ | – | ☆ | 1-541-612-11 |
| Performance Check | Abnormal noise | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | |
| | Back tension measurement | – | ☆ | – | ☆ | – | ☆ | – | ☆ | – | ☆ | |
| | Brake system | – | ☆ | – | ☆ | – | ☆ | – | ☆ | – | ☆ | |
| | FWD, RVS torque measurement | – | ☆ | – | ☆ | – | ☆ | – | ☆ | – | ☆ | |

**Notes:** When overhauling the unit, perform parts replacement referring to the table above.

Regarding Oil:

- Always use the specified oil (using oil of different viscosity, etc. can cause troubles of several kinds).
  Specified oil: Part No. 7-661-018-01
  (Mitsubishi Diamond Oil Hydrofluid EP56)
- Be sure that no dirt is mixed in the oil to be used on axle bearings. Use of dirty oil can result in bearing wear and burning.
- By "one drop of oil" is meant the quantity of oil adhering to the end of a a 2mm-diameter rod as shown in Fig. 2-2.

On grease:

- Use the specified grease.
  Grease: Part No. 7-662-010-08
  (Sony grease SGL-701)

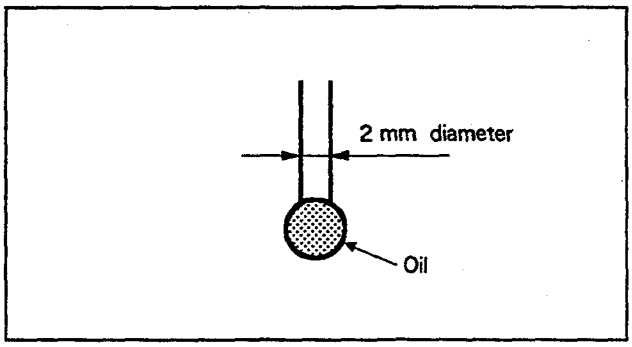


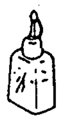
Fig. 2-2.

## 2-5. SERVICING TOOLS

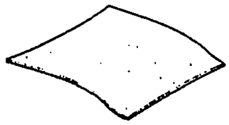
| Ref. No. | Name | Part Code | Marking | Application, etc. |
|---|---|---|---|---|
| J-1 | Cleaning fluid | Y-2031-001-0 | – | |
| J-2 | Chamois cloth | 2-034-697-00 | – | |
| J-3 | Head demagnetizer | Commercially available | – | |
| J-4 | Dental mirror<br>Spare mirror | J-6080-029-A<br>J-6080-030-1 | SL-5052 | Tape path |
| J-5 | Alignment tape NTSC (WR5-1N)<br>PAL (WR5-1C) | 8-967-995-01<br>8-967-995-06 | | Tape path |
| J-6 | FWD/RVS takeup torque cassette | J-6080-824-A | GD-2086 | |
| J-7 | Rotary drum jig | (Attached to the maintenance rotary upper drum) | | |
| J-8 | Mode selector III conversion connector | J-6082-021-A | | General |
| J-9 | Mode selector III panel | J-6082-023-A | | General |
| J-10 | Mode selector | J-6080-825-A | | General |
| J-11 | Hexagonal wrench detection (0.89 mm)<br>or L wrench (0.89 mm) | 7-700-766-01<br>7-700-736-06 | | Tape path |
| J-12 | Sony grease (SGL-701) | 7-662-010-08 | | |

Other devices: Oscilloscope
Analog tester (20 kΩ )

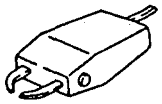
J-1



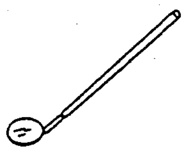
J-2



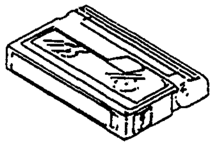
J-3



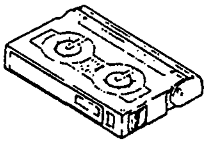
J-4



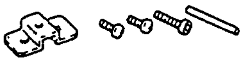
J-5



J-6

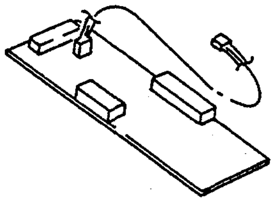


J-7

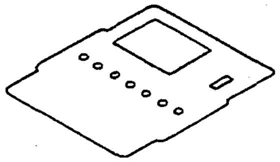


(Attached to the maintenance rotary upper drum)

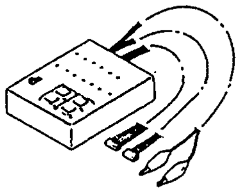
J-8



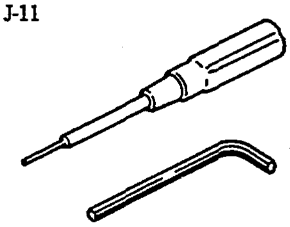
J-9



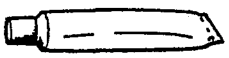
J-10



J-11



J-12



# 3. MECHANICAL BLOCK CHECK, ADJUSTMENT AND REPLACEMENT

**Notes:**
- Use the mode selector (Ref. No. J-10) for procedures in this chapter.
- Modes within a frame □ are those set by pressing the buttons of the mode selector.

## 3-1. HC ROLLER ASSEMBLY

### 1. Removal (See Fig. 3-1.)

1) Remove the screw ❶, then remove the HC roller assembly ❷.

### 2. Installation (See Fig. 3-1.)

1) Align the two dowels ❸ attached to the HC roller assembly ❷ with the two holes ❹ in the mechanism chassis.
2) Secure the HC roller assembly ❷ with the screw ❶.

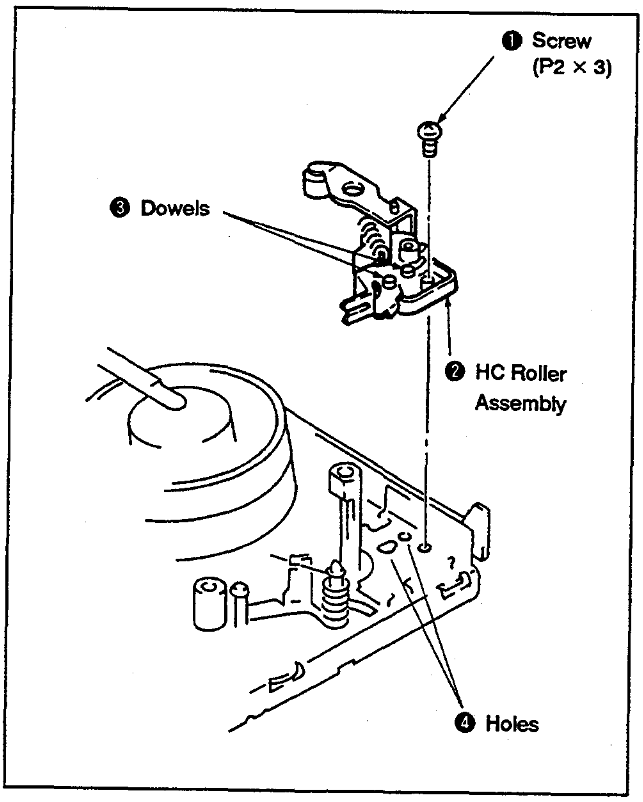

❶ Screw (P2 × 3)
❸ Dowels
❷ HC Roller Assembly
❹ Holes

Fig. 3-1.

## 3-2. GUIDE GUARD ASSEMBLY

### 1. Removal (See Fig. 3-2.)

Remove the screw ❶, then remove the guide guard assembly ❷.

### 2. Installation (See Fig. 3-2.)

1) Align the dowel ❸ attached to the guide guard assembly ❷ with the hole ❹.
2) Secure the guide guard assembly ❷ with the screw ❶.

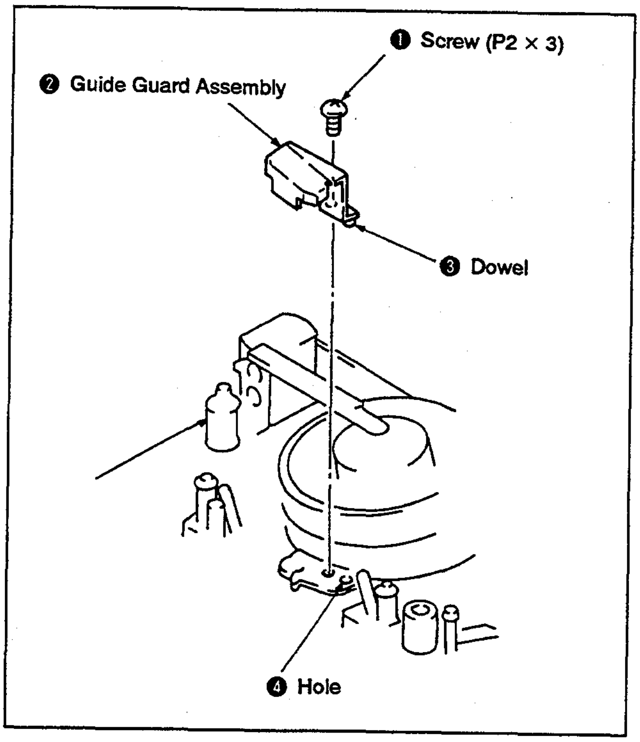

❶ Screw (P2 × 3)
❷ Guide Guard Assembly
❸ Dowel
❹ Hole

Fig. 3-2.

## 3-3. DC MOTOR (CAPSTAN MOTOR) ASSEMBLY

### 1. Removal (See Fig. 3-3.)

1) Set the ULD mode.
2) Turn the stopper ❶ in the direction of the arrow Ⓐ as far as it will go.
3) Remove the two screws ❷, then remove the DC motor ❸.

### 2. Installation (See Fig. 3-3.)

1) Align the two screwed dowels ❹ with the two holes ❺, then engage the toothed part ❻ with the connecting gear ❼.
2) Secure the DC motor assembly ❸ with the two screws ❷.
3) Turn the stopper ❶ in the direction of the arrow Ⓑ as far as it will go.

**Note:**
- When engaging the gears, take care not to damage their teeth.
- Do not leave any clearance between the DC motor ❸ and the chassis.
- Do not touch the capstan motor axle*, the oil seal* and the rotor*.

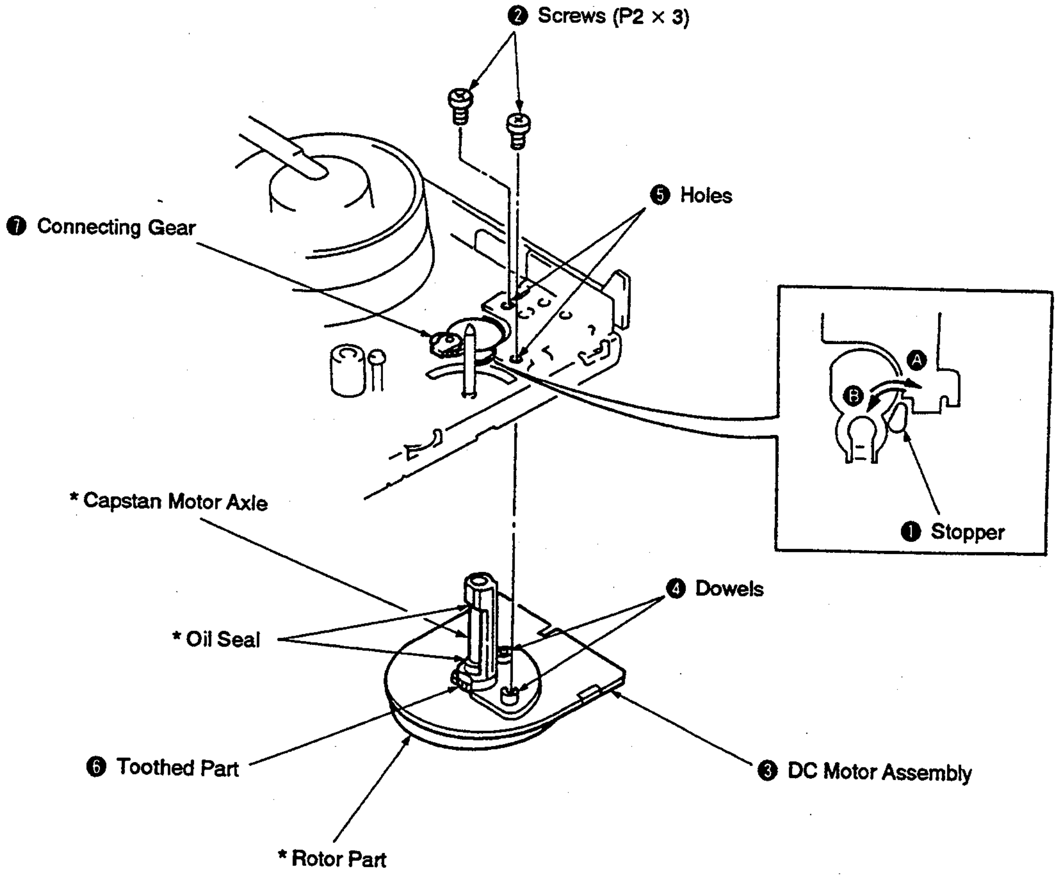

❷ Screws (P2 × 3)
❺ Holes
❼ Connecting Gear
Ⓐ
Ⓑ
❶ Stopper
* Capstan Motor Axle
❹ Dowels
* Oil Seal
❻ Toothed Part
❸ DC Motor Assembly
* Rotor Part

Fig. 3-3.

## 3-4. S BRAKE, T BRAKE

### 1. Removal (See Fig. 3-4.)

1) Remove the torsion coil spring (ST) ❶.
2) Remove the axle holding pin ❷, then remove the T brake ❸.
3) Remove the axle holding pin ❹, then remove the S brake ❺.

### 2. Installation (See Fig. 3-4.)

1) While fitting the toothed part ❻ into the notch ❼, mount the S brake ❺.
2) Insert the axle holding pin ❹.
3) Insert the axle ❽ to the S reel side of the brake release arm ❾ so that the Ⓐ part comes closer to the drum than part Ⓑ, and mount the T brake ❸.
4) Insert the axle holding pin ❷.
5) Insert the torsion coil spring (ST) ❶ below the claw ⓫ of the axle ❿, then hook it to two claws ⓬.

**Note:** Confirm that the claws of axle holding pins ❷ and ❹ are not broken before assembling.

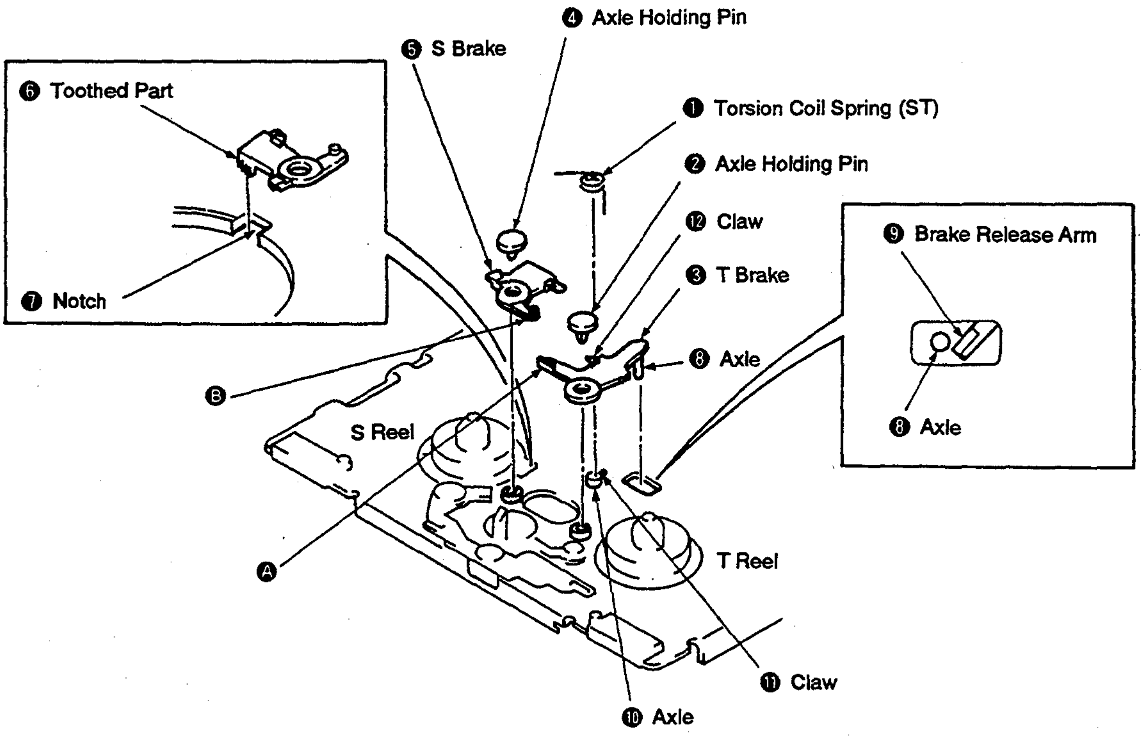

❹ Axle Holding Pin
❺ S Brake
❻ Toothed Part
❼ Notch
❶ Torsion Coil Spring (ST)
❷ Axle Holding Pin
⓬ Claw
❸ T Brake
❾ Brake Release Arm
❽ Axle
❽ Axle
Ⓑ
S Reel
Ⓐ
T Reel
⓫ Claw
❿ Axle

Fig. 3-4.

## 3-5. LB BRAKE, AXLE HOLDING PINS

### 1. Removal (See Fig. 3-5.)

1) Remove the screw ❶, then remove the TL holding plate ❷.
2) Remove the axle holding pin ❸, then remove the LB brake ❹.
3) Remove the axle holding pin ❺, then remove the LB lever ❻.

### 2. Installation (See Fig. 3-5.)

1) Mount the LB lever ❻ matching it to pin ❼ of the LB gear, then secure it with the axle holding pin ❺.
2) Insert the pin ❽ into the notch ❾ of the LB lever ❻, then mount the LB brake ❹ while inserting the toothed part ❿ into the notch ⓫.
3) Insert the axle holding pin ❸.
4) Align the dowel ⓬ with the hole ⓭, then mount the TL holding plate and secure it with the screw ❶.

**Note:** Confirm that the claws of axle holding pins ❸ and ❺ are not broken before assembling.

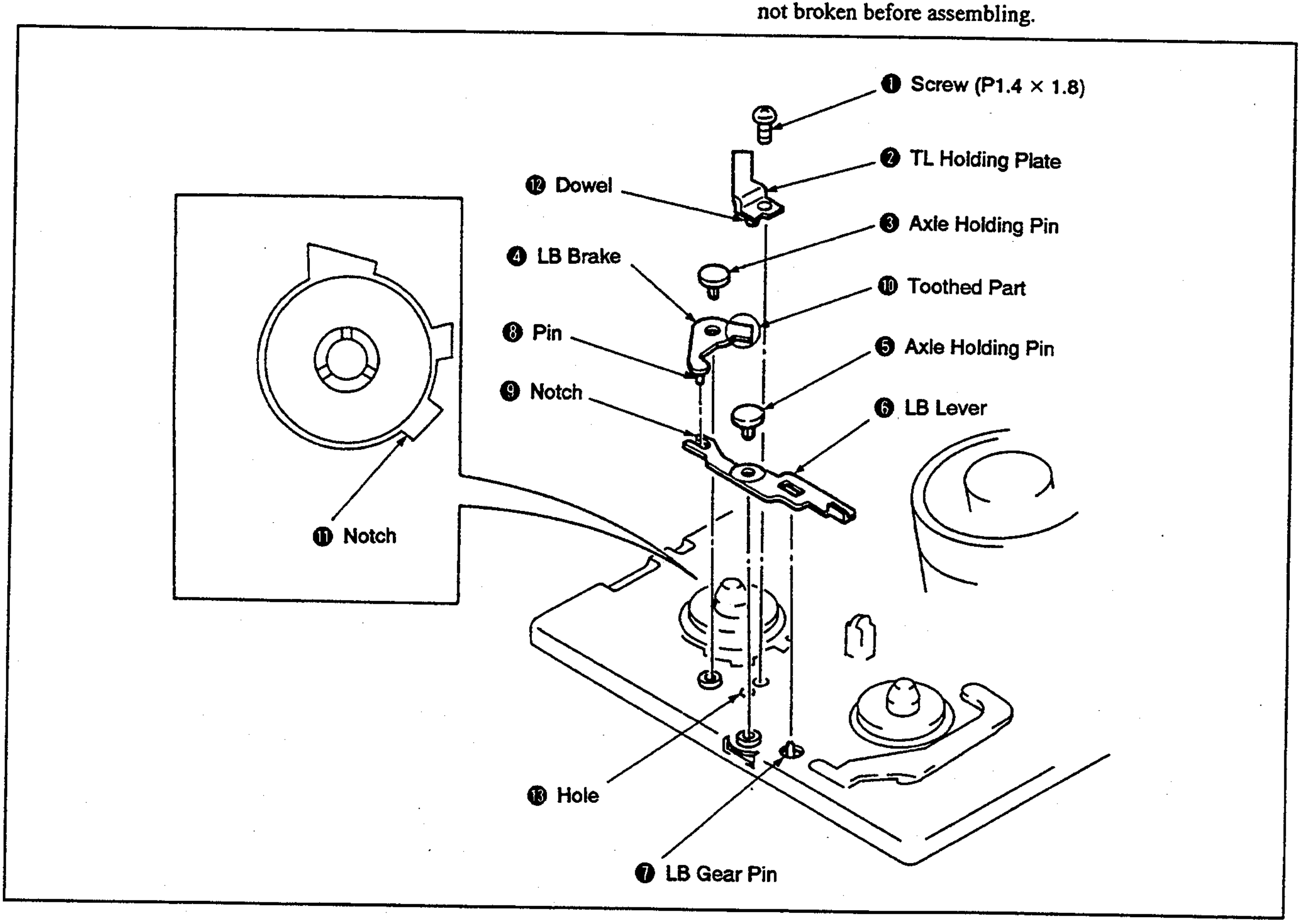

❶ Screw (P1.4 × 1.8)
❷ TL Holding Plate
⓬ Dowel
❸ Axle Holding Pin
❹ LB Brake
❿ Toothed Part
❽ Pin
❺ Axle Holding Pin
❾ Notch
❻ LB Lever
⓫ Notch
⓭ Hole
❼ LB Gear Pin

Fig. 3-5.

## 3-6. LB RELEASE ARM

### 1. Removal (See Fig. 3-6.)

1) While pushing the claw ❶ in the direction of the arrow, remove the LB release arm ❷.

### 2. Installation (See Fig. 3-6.)

1) Fit the LB release arm ❷ to the axle ❸, insert protrusions ⓐ, ⓑ, ⓒ, ⓓ into the three holes ❹, then secure with the claw ❶.

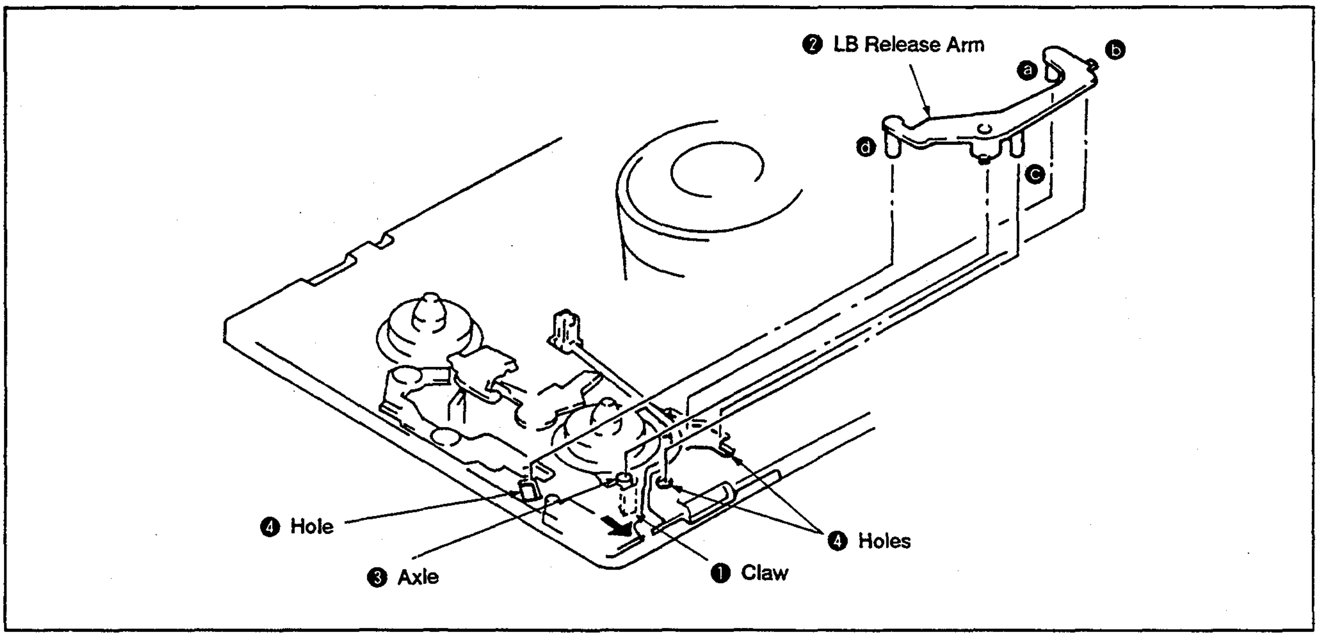

❷ LB Release Arm
ⓐ
ⓑ
ⓓ
ⓒ
❹ Hole
❸ Axle
❹ Holes
❶ Claw

Fig. 3-6.

## 3-7. RK STOPPER, RK STOPPER ARMS

### 1. Removal (See Fig, 3-7.)

1) Remove the torsion coil spring (RK) ❶.
2) Open the chassis claw ❷, then remove the RK stopper arm ❸.
3) Remove the RK stopper ❹.

### 2. Installation (See Fig. 3-7.)

1) Mount the RK stopper ❹ onto the axle ❺.
2) Mount the RK stopper arm ❸ onto the axle ❻, insert Pin ❿ into hole ⓫, then hook the claw ❷ of the chassis to the hole ❼.
3) Insert the torsion coil spring (RK) ❶ into the axle ❺, then hook it to claws ❽ and ❾.

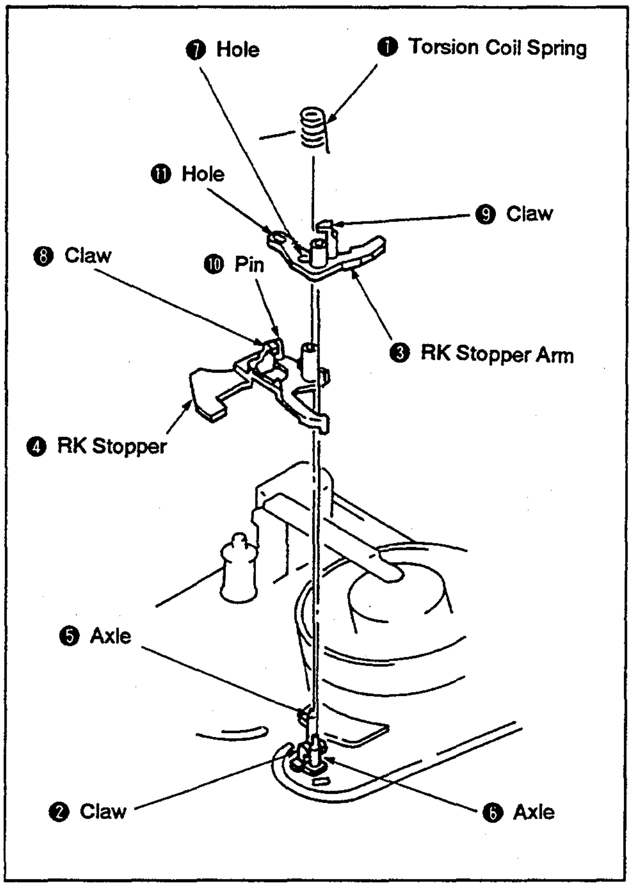

❼ Hole
❶ Torsion Coil Spring
⓫ Hole
❾ Claw
❽ Claw
❿ Pin
❸ RK Stopper Arm
❹ RK Stopper
❺ Axle
❷ Claw
❻ Axle

Fig. 3-7.

## 3-8. PINCH ARM ASSEMBLY, TG-7 ASSEMBLY

### 1. Removal (See Fig. 3-8.)

1) Set the $\boxed{\text{IB}}$ mode.
2) Remove the stopper washer ❶, then remove the pinch arm assembly ❷.
3) Bend the claw ❹ inside hole ❸ in the direction of the arrow using a thin screwdriver or the like, then remove the TG-7 plate spring ❺.
4) Remove the TG-7 arm assembly ❻.

### 2. Installation (See Fig. 3-8.)

1) Grease the inner surfaces of hole ❼ (See Fig. A).
2) Insert the axle ❽ of the TG-7 arm assembly ❻ into the hole ❼.
3) Grease the shaded section ⓐ (See Fig. A).
4) Insert the TG-7 plate spring ❺ into the hole ❸, then secure it with the claw ❹.
5) Apply half a drop of oil to the axle ❾ (See Fig. B).
6) Fit the pinch arm assembly ❷ to the axle ❾ and insert the pinch roller sub arm assembly tab ❿ into the ⓑ part.
7) Install the stopper washer ❶.

**Note:**
- Take care not to grease the screw ⓫ of the TG-7 arm assembly ❻ (See Fig. A).
- When fitting the pinch arm assembly ❷ to the axle ❾, make sure that it does not touch the TG-7 guide ⓬ or the rubber roller ⓭.
- After assembling, be sure to perform tape path adjustment as described in section 4.

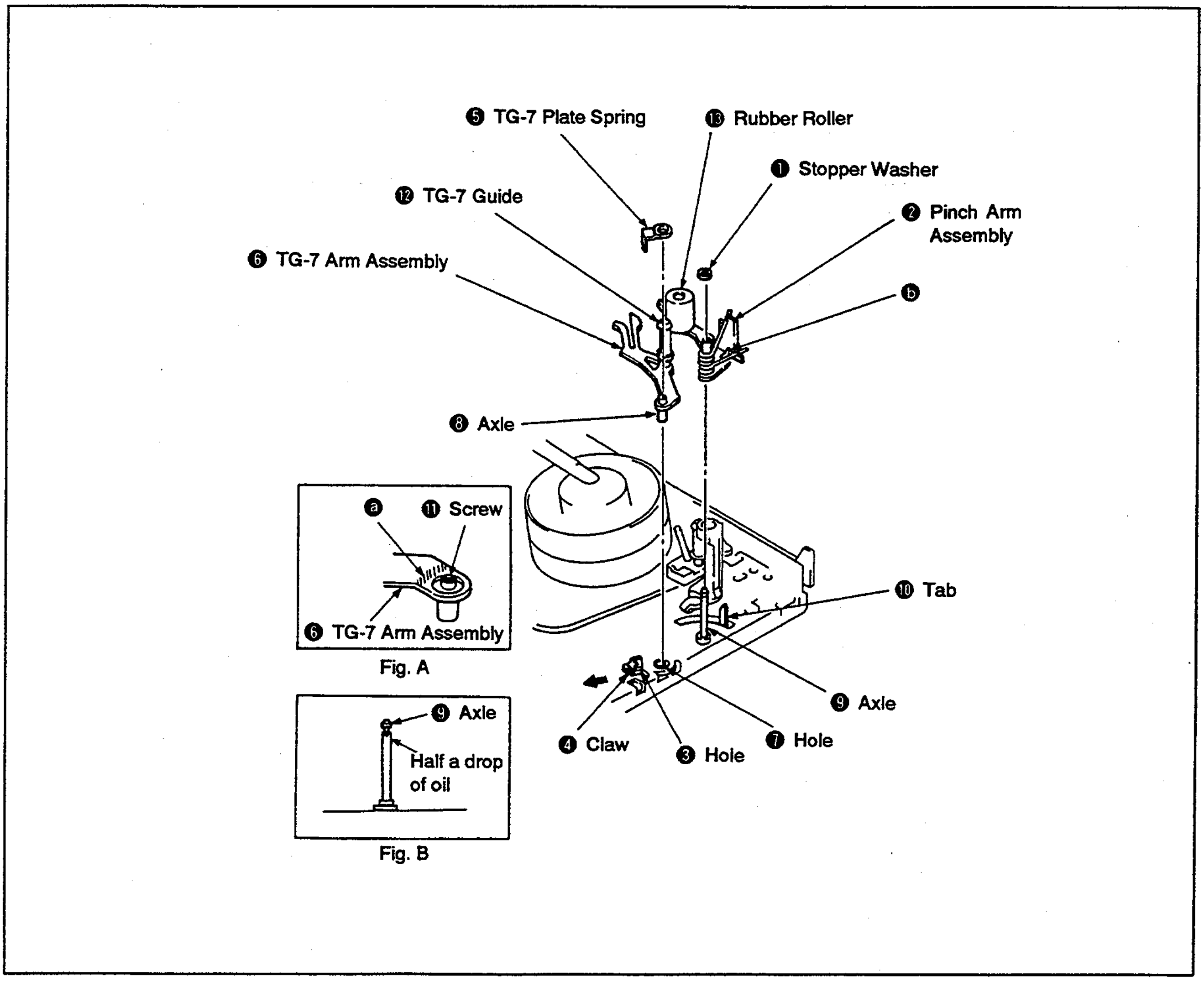

❺ TG-7 Plate Spring
⓭ Rubber Roller
❶ Stopper Washer
⓬ TG-7 Guide
❷ Pinch Arm Assembly
❻ TG-7 Arm Assembly
ⓑ
❽ Axle
ⓐ
⓫ Screw
❻ TG-7 Arm Assembly
❿ Tab
❾ Axle
❹ Claw
❸ Hole
❼ Hole
❾ Axle
Half a drop of oil

Fig. A

Fig. B

Fig. 3-8.

## 3-9. TG-2 ASSEMBLY

### 1. Removal (See Fig. 3-9.)

1) Remove the TG-2 upper flange assembly ❶.
2) Remove the TG-2 roller ❷, the TG-2 sleeve ❸, the TG-2 lower flange ❹ and the compression spring ❺.

### 2. Installation (See Fig. 3-9.)

1) Mount the compression spring ❺, the TG-2 lower flange ❹, the TG-2 sleeve ❸ and the TG-2 roller ❷ to the axle.
2) Secure the TG-2 upper flange ❶ to the axle by rotating it 4 to 6 turns.

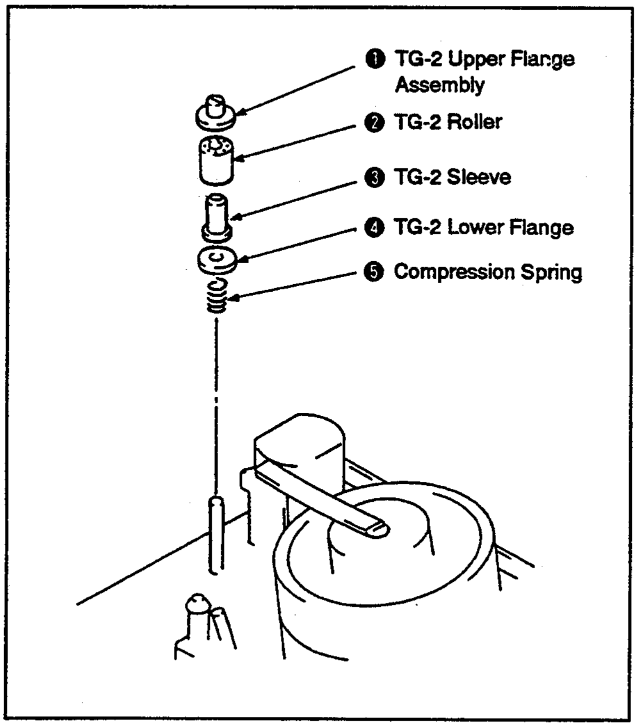

❶ TG-2 Upper Flange Assembly
❷ TG-2 Roller
❸ TG-2 Sleeve
❹ TG-2 Lower Flange
❺ Compression Spring

Fig. 3-9.

### 3. TG-2 Height Preset (see Fig. 3-10.)

1) Adjust height from the mechanism chassis upper surface to the TG-2 upper flange ❶ upper surface to 18.6 mm by turning the TG-2 upper flange ❶.

**Note:** After adjustment, be sure to perform tape path adjustment as described in section 4.

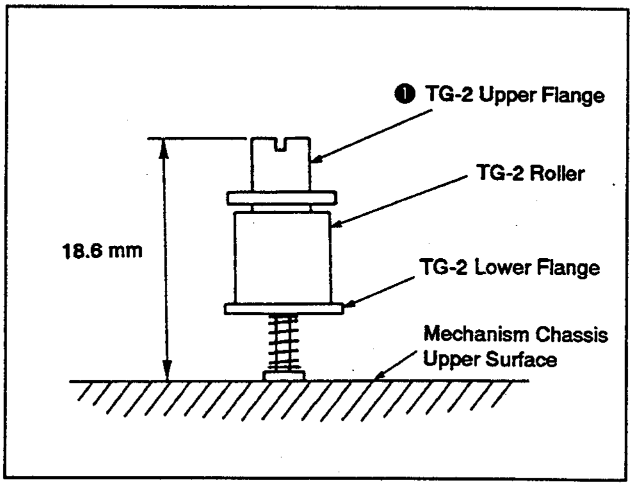

❶ TG-2 Upper Flange
TG-2 Roller
18.6 mm
TG-2 Lower Flange
Mechanism Chassis Upper Surface

Fig. 3-10.

## 3-10. S REEL TABLE ASSEMBLY, T REEL TABLE ASSEMBLY

### 1. Removal (See Fig. 3-11.)

1) Remove the S brake and T brake as described in section 3-4.
2) Remove the TL holding plate as described in section 3-5.
3) Remove the tension regulator band assembly as described in section 3-11.
4) Remove the S reel table assembly ❶.
5) Turn the stopper ❷ approx. 90 ° in the direction of the arrow Ⓐ.
6) While sliding the LB release arm ❸ in the direction of the arrow Ⓑ, remove the T reel table assembly ❹.

### 2. Installation (See Fig. 3-11.)

1) Apply half a drop of oil to the axle ❺ (See Fig. A).
2) Move the RK gear ❻ in the direction of the arrow Ⓒ and the TS brake ❼ in the direction of the arrow Ⓓ, putting them out of the way.
3) While sliding the LB release arm ❸ in the direction of the arrow Ⓑ, mount the T reel table assembly ❹ onto the axle ❺, then turn the stopper ❷ in the direction of the arrow Ⓔ as far as it will go.
4) Apply half a drop of oil to the axle ❽ (See Fig. B).
5) Move the RK gear ❻ in the direction of the arrow Ⓕ, the UL brake ❾ in the direction of the arrow Ⓖ and the LB brake ❿ in the direction of the arrow Ⓗ, putting them out of the way.
6) Mount the S reel table ❶ onto the axle ❽.
7) Mount the tension regulator band assembly as described in section 3-11.
8) Mount the TL holding plate as described in section 3-5.
9) Mount the S brake and T brake assemblies as described in section 3-4.

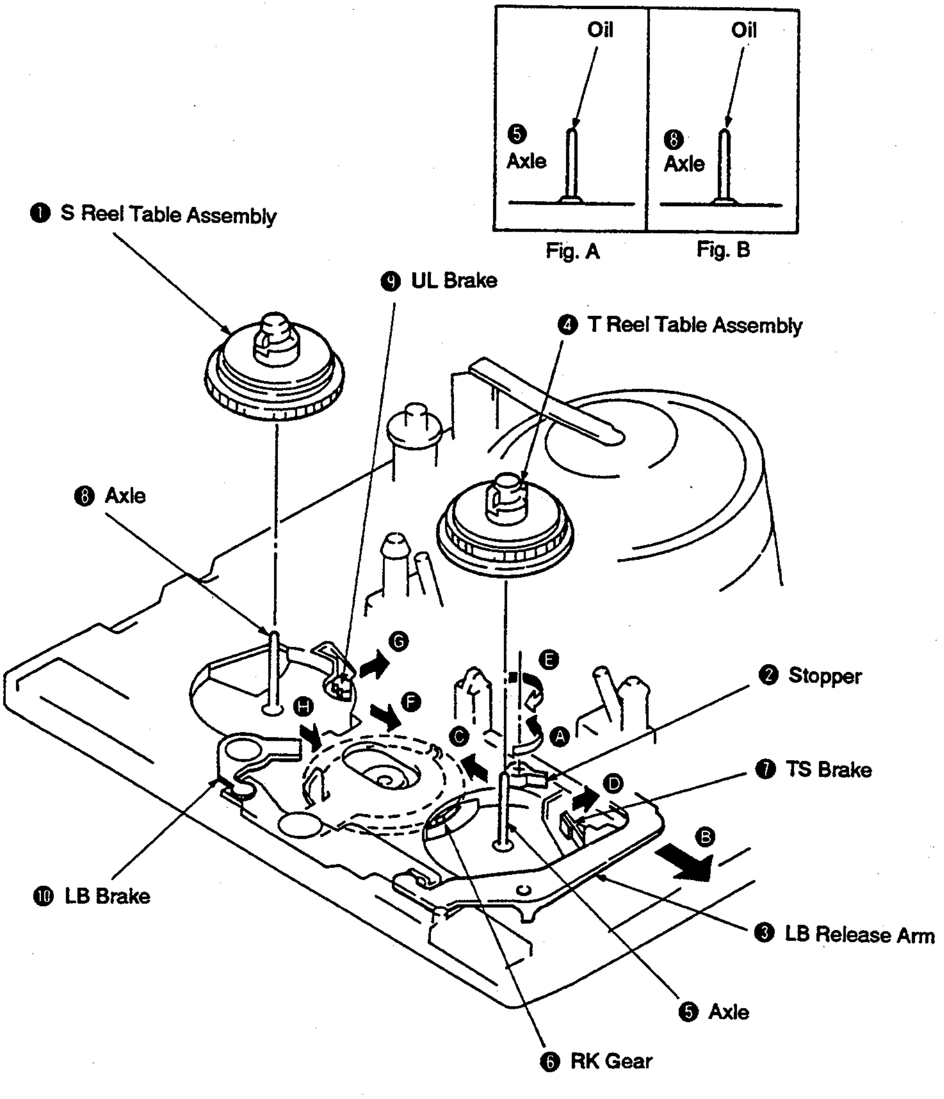

Oil
❺ Axle
Oil
❽ Axle
Fig. A
Fig. B
❶ S Reel Table Assembly
❾ UL Brake
❹ T Reel Table Assembly
❽ Axle
Ⓖ
Ⓔ
Ⓗ
Ⓕ
Ⓒ
Ⓐ
❷ Stopper
Ⓓ
❼ TS Brake
Ⓑ
❿ LB Brake
❸ LB Release Arm
❺ Axle
❻ RK Gear

Fig. 3-11.

## 3-11. TENSION REGULATOR BAND ASSEMBLY, TENSION REGULATOR ARM ASSEMBLY

### 1. Removal (See Fig. 3-12.)

1) Remove the TL holding plate as described in section 3-5.
2) Remove the screw ❶.
3) Using a thin screwdriver or the like, remove the tension regulator band assembly ❹ from the axle ❸ of tension regulator arm assembly ❷.
4) Remove the tension spring ❺.
5) Remove the stopper washer ❻ from the back of the mechanism chassis, then remove the tension regulator arm assembly ❷.
6) Open the claw ❼, then remove the adjust arm ❽.

**Note:** When removing the tension regulator band assembly ❹, take care not to twist or bend it, and not to touch the felt surface ❾.

### 2. Installation (See Fig. 3-12.)

1) Engage the adjust arm ❽ in the position shown in Fig. A, then close the claw ❼.
2) Apply half a drop of oil to the hole ❿.
3) Mount the tension regulator arm assembly ❷, then insert it into the slot ⓫ so that the ⓐ part comes to the arrow Ⓐ side of the switch lever assembly (See Fig. B).
4) While holding the tension regulator arm assembly ❷ from the mechanism chassis front, secure it with the stopper washer ❻ from the back.
5) Hook the R hook of the tension spring ❻ to the adjust arm ❽ as shown in the figure, then hook the opposite end to the tension regulator arm assembly ❷.
6) Mount the tension regulator band assembly ❹ onto the axle ❸ of tension regulator arm assembly ❷, and place it so that the felt surface ❾ comes against the shaded portion of the S reel table assembly ⓬.
7) Mount the tension regulator plate ⓭ of the tension regulator band assembly ❹ so that it is aligned with the dowel ⓮ of the mechanism chassis, then secure it temporarily with the screw ❶.
8) Mount the TL holding plate as described in section 3-5.
9) Adjust tension regulator FWD position as described in section 3-12.
10) Perform adjust arm adjustment as described in section 3-22.

**Note:** When mounting the tension regulator band assembly ❷, take care not to twist or bend it, and not to touch the felt surface ❾.

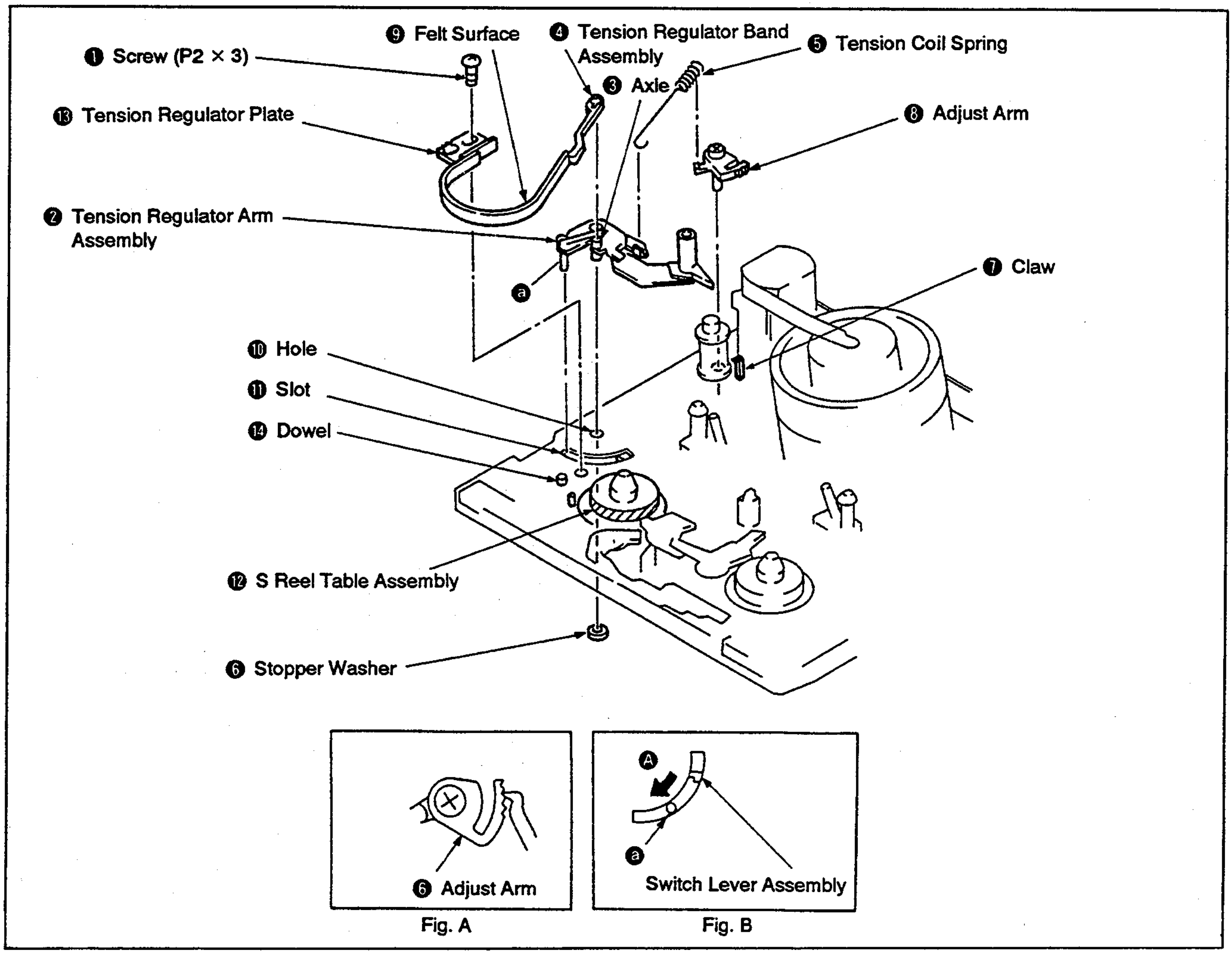

❶ Screw (P2 × 3)
❾ Felt Surface
❹ Tension Regulator Band Assembly
❺ Tension Coil Spring
❸ Axle
⓭ Tension Regulator Plate
❽ Adjust Arm
❷ Tension Regulator Arm Assembly
❼ Claw
ⓐ
❿ Hole
⓫ Slot
⓮ Dowel
⓬ S Reel Table Assembly
❻ Stopper Washer
❻ Adjust Arm
Ⓐ
ⓐ
Switch Lever Assembly

Fig. A

Fig. B

Fig. 3-12.

## 3-12. TENSION REGULATOR FWD POSITION PRESET (See Fig. 3-13.)

1) Load a cassette tape and set the FWD mode.
2) Confirm whether the distance between ⓐ part of the tension regulator arm ❶ and the groove ❷ of the chassis is 1.1 ± 0.3 mm. If this distance is not within the specified range, remove the cassette tape and perform the following adjustment.
3) Loosen the fixing screw ❹ of the tension regulator band assembly ❸.
4) Slide the tension regulator plate ❺ in the direction of the arrow Ⓐ if the measured distance is over the specified range, and in the direction of the arrow Ⓑ if it is under that range. Then, fix it with the screw ❹.
5) Repeat steps 1) and 2) and confirm that the distance is within the specified range.

**Note:** Use a cassette with the tape advanced halfway.

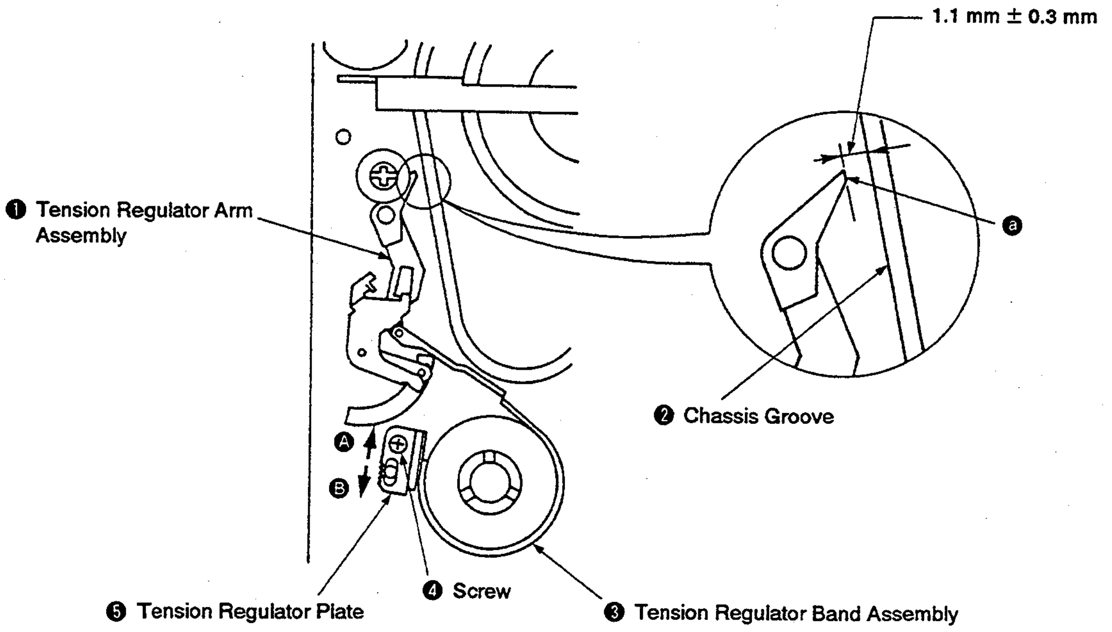

1.1 mm ± 0.3 mm
❶ Tension Regulator Arm Assembly
ⓐ
❷ Chassis Groove
Ⓐ
Ⓑ
❹ Screw
❺ Tension Regulator Plate
❸ Tension Regulator Band Assembly

Fig. 3-13.

## 3-13. DRUM ASSEMBLY, DEW SENSOR

### 1. Removal (See Fig. 3-14.)

1) Set the EJECT mode.
2) Remove the flexible board ❶ and the two connectors ❷.
3) Remove the guide guard assembly as described in section 3-2.
4) Remove the screw ❸, then remove the axle ground terminal ❹.
5) Remove the three screws ❺, then remove the drum assembly ❻ from the mechanism chassis.
6) Remove the connector ❿
7) Remove the screw ❼, then remove the dew sensor ❽.

**Note:**
- When removing the drum assembly ❻ from the mechanism chassis, take care not to cut the flexible board ❶ or the harness.
- Take care not to touch the head tip ❾.

### 2. Installation (See Fig. 3-14.)

1) Insert part ⓐ of the dew sensor ❽ into the notch ⓫ of the mechanism chassis, then secure it with the screw ❼.
2) Mount the connector ❿.
3) Clamp the harness ⓯ of the dew sensor ❽ with the reinforcing the claw ⓰ of the plate SS assembly (See Fig. A).
4) Insert the connector ❷ and the flexible board ❶ into the hole ⓬ of the mechanism chassis, align the drum assembly ❻ with the two dowels ⓭ and secure it with the three screws ❺.
5) Align the axle ground terminal ❷ with the two dowels ⓮ of the mechanism chassis and secure it with the screw ❸.
6) Mount the guide guard assembly as described in section 3-2.
7) Mount the two connectors ❷ and the flexible board ❶.

**Note:**
- Take care not to cut the flexible board ❶ or the harness ⓯.
- Take care not to touch the head tip ❾.
- After assembling, be sure to perform Tape Path Adjustment following instructions in section 4.

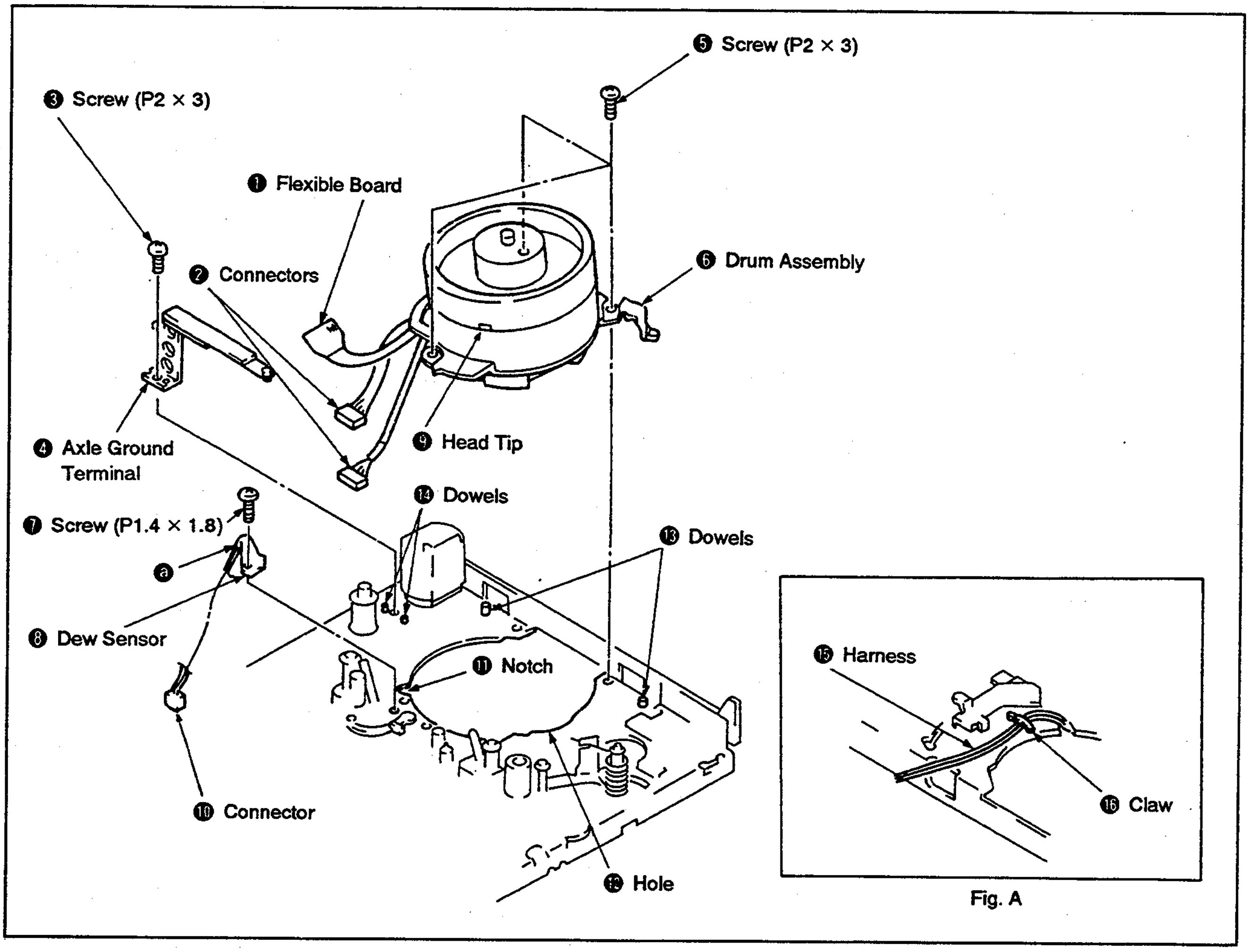

❺ Screw (P2 × 3)
❸ Screw (P2 × 3)
❶ Flexible Board
❷ Connectors
❻ Drum Assembly
❹ Axle Ground Terminal
❾ Head Tip
⓮ Dowels
❼ Screw (P1.4 × 1.8)
ⓐ
⓭ Dowels
❽ Dew Sensor
⓫ Notch
❿ Connector
⓬ Hole
⓯ Harness
⓰ Claw
Fig. A

Fig. 3-14.

## 3-14. EJECT LEVER, SWITCH LEVER ASSEMBLY, PINCH ROLLER SUB ARM ASSEMBLY

### 1. Removal (See Fig. 3-15.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Set the STOP mode.
3) Remove the claw ❶, then remove the eject lever ❷.
4) Remove the stopper washer ❸, then remove the switch lever assembly ❹.
5) Remove the pinch roller load spring ❺.
6) Remove the stopper washer ❻, then remove the pinch roller sub arm assembly ❼.

### 2. Installation (See Fig. 3-15.)

1) Grease the axle ❽ (See Fig. A).
2) Assemble by inserting ⓐ part of the pinch roller sub arm assembly ❼ into the slot ❾, then insert the pin ❿ into the loading lever assembly notch ⓫.
3) Secure with the stopper washer ❻.
4) Mount the pinch roller load spring ❺ by catching its ⓑ end between the claw ⓬ and the chassis side and its ⓒ end to the claw ⓬.
5) Apply half a drop of oil to the axle ⓭ (See Fig. B).
6) Align the groove ⓮ of the switch lever assembly ❹ with the mode detector switch protrusion ⓯, mount it on the axle ⓭, then insert the pin ⓰ into the drive gear (left) assembly ⓱ outer groove.
7) Secure with the stopper washer ❸.
8) Mount the eject lever ❷ and close the claw ❶.
9) Mount the DC motor (capstan motor) as described in section 3-3.

**Note:** When mounting the switch lever assembly ❹ onto the axle ⓭ with the tension regulator arm assembly installed, set the pin ⓲ to the arrow Ⓐ side of the switch lever assembly ❹.

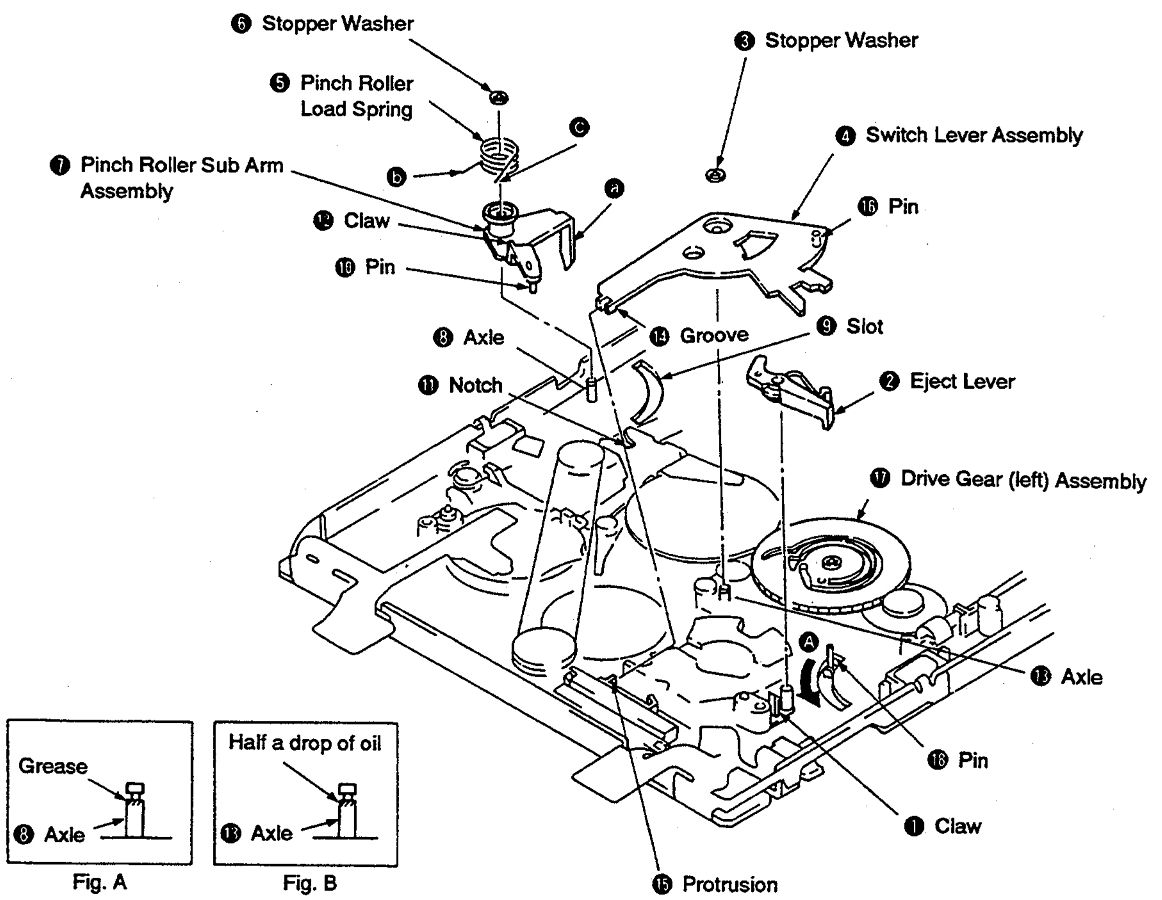

❻ Stopper Washer
❺ Pinch Roller Load Spring
❼ Pinch Roller Sub Arm Assembly
ⓒ
ⓑ
ⓐ
⓬ Claw
❿ Pin
❽ Axle
⓫ Notch
❸ Stopper Washer
❹ Switch Lever Assembly
⓰ Pin
⓮ Groove
❾ Slot
❷ Eject Lever
⓱ Drive Gear (left) Assembly
Ⓐ
⓭ Axle
⓲ Pin
❶ Claw
⓯ Protrusion
Grease
❽ Axle
Fig. A
Half a drop of oil
⓭ Axle
Fig. B

Fig. 3-15.

## 3-15. TIMING BELT (L) , RC GEAR ASSEMBLY, LOADING LEVER ASSEMBLY, TIMING BELT (S), CONNECTING GEAR ASSEMBLY

### 1. Removal (See Fig. 3-16.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the pinch roller sub arm assembly as described in section 3-14.
3) Set the STOP mode.
4) Remove the stopper washer ❶ , then remove the RC gear assembly ❷ from the axle ❹ with the timing belt (L) ❸ attached.
5) Remove the timing belt (L) ❸ from the idler pulley assembly ❺.
6) Remove the stopper washer ❻ and remove the loading lever assembly ❽ while pushing the claw ❼ in the direction of the arrow 🅐.
7) Turn the stopper ❾ approx. 90 ° in the direction of the arrow 🅑.
8) Remove the connecting gear assembly ⓫ from the axle ⓰ with the timing belt (S) ❿ attached.
9) Remove the timing belt (S) ❿ from the idler pulley assembly ❺.

**Note:** When removing the connecting gear ⓫ , take care not touch the flange section ⓑ.

### 2. Installation (See Fig. 3-16.)

1) Apply half a drop of oil to the axle ⓰ (See Fig. F).
2) Hook one end of the timing belt (S) ❿ onto the connecting gear assembly ⓫ and the other end onto gear ⓓ of the idler pulley assembly ❺. (Refer to the figure.)
3) Mount the connecting gear assembly ⓫ with the timing belt (S) ❿ attached to the axle ⓰.
4) Turn the stopper ❾ in the direction of the arrow 🅒 as far as it will go.
5) Apply half a drop of oil to the axle ⓬ (See Fig. A).
6) Fit the loading lever assembly ❽ to the axle ⓬, secure the ⓐ part with the claw ❼ and place the pin ⓭ into the groove of the drive gear (right) assembly ⓮.
7) Install the stopper washer ❻.
8) Place the timing belt (L) ❸ around the gears of the RC gear assembly ❷ indicated in Fig. B, and its opposite side around the gear ⓒ of the idler pulley assembly ❺. (See Fig. E.)
9) Mount the RC gear assembly ❷ onto the axle ❹ with the timing belt (L) ❸ attached, and engage it with the gear of the RK gear assembly ⓯.
10) Install the stopper washer ❶.
11) Grease parts of the loading lever assembly ❽ indicated in Fig. C.
12) Mount the pinch roller sub arm assembly as described in section 3-14.
13) Mount the DC motor (capstan motor) as described in section 3-3.

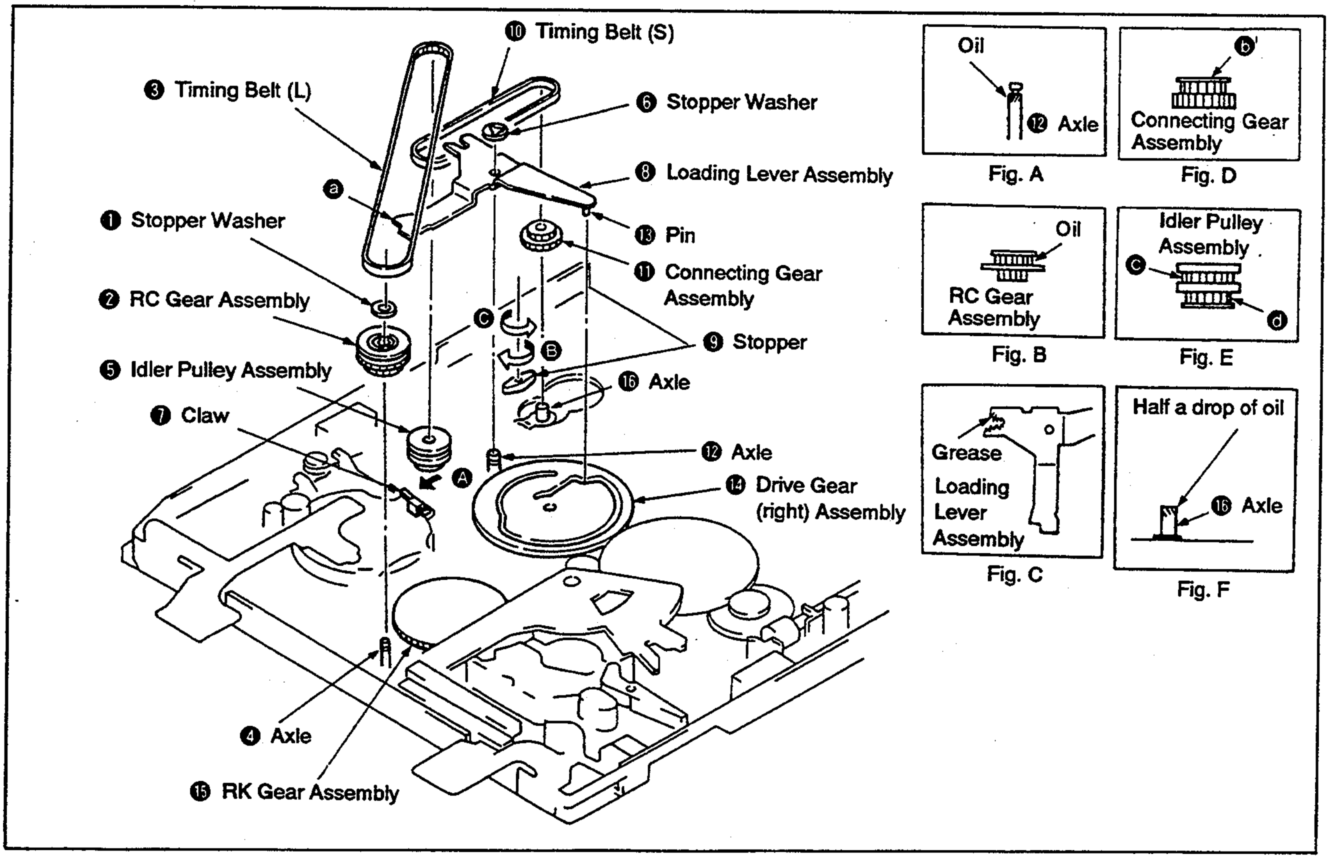

❿ Timing Belt (S)
❸ Timing Belt (L)
❻ Stopper Washer
❽ Loading Lever Assembly
ⓐ
❶ Stopper Washer
⓭ Pin
⓫ Connecting Gear Assembly
❷ RC Gear Assembly
🅒
🅑
❾ Stopper
❺ Idler Pulley Assembly
⓰ Axle
❼ Claw
⓬ Axle
🅐
⓮ Drive Gear (right) Assembly
❹ Axle
⓯ RK Gear Assembly
Oil
⓬ Axle
Fig. A
ⓑ
Connecting Gear Assembly
Fig. D
Oil
RC Gear Assembly
Fig. B
Idler Pulley Assembly
ⓒ
ⓓ
Fig. E
Grease
Loading Lever Assembly
Fig. C
Half a drop of oil
⓰ Axle
Fig. F

Fig. 3-16.

## 3-16. IDLER PULLEY, TS BRAKE ASSEMBLY, LB GEAR ASSEMBLY, RK GEAR ASSEMBLY

### 1. Removal (See Fig. 3-17.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the switch lever assembly as described in section 3-14.
3) Remove the timing belt (L), the RC gear assembly, the loading lever assembly, the timing belt (S) and the connecting gear assembly described in section 3-15.
4) Set the STOP mode.
5) Remove the stopper washer ❶, then remove the idler pulley ❷.
6) Open the claw ❸, then remove the TS brake assembly ❹.
7) Remove the torsion coil spring (LB) ❺.
8) Remove the stopper washer ❻, then remove the LB gear assembly ❼.
9) Remove the RK gear assembly ❽.

**Note:** When removing the idler pulley ❷, take care not to touch the flange section ⓐ. (See Fig. C.)

### 2. Installation (See Fig. 3-17.)

1) Apply half a drop of oil to the axle ❾ (See Fig. A).
2) Mount the RK gear assembly ❽ onto the axle ❾, keeping it in horizontal position.
3) Apply half a drop of oil to the axle ❿ (See Fig. B).
4) Mount the LB gear assembly ❼ onto the axle ❿ and secure it with the stopper washer ❻.
5) Insert the torsion coil spring (LB) ❺ into the axle ⓫, then hook it to the mechanism chassis notch ⓬ and to the tab ⓭.
6) Mount the TS brake assembly ❹ and close the claw ❸.
7) Apply half a drop of oil to the axle ⓰ (See Fig. D).
8) Mount the idler pulley ❷ onto the axle ⓰, then secure it with the stopper washer ❶.
9) Mount the timing belt (L) , the RC gear assembly, the loading lever assembly, the timing belt (S) and the connecting gear assembly as described in section 3-15.
10) Mount the switch lever assembly as described in section 3-14.
11) Mount the DC motor (capstan motor) as described in section 3-3.

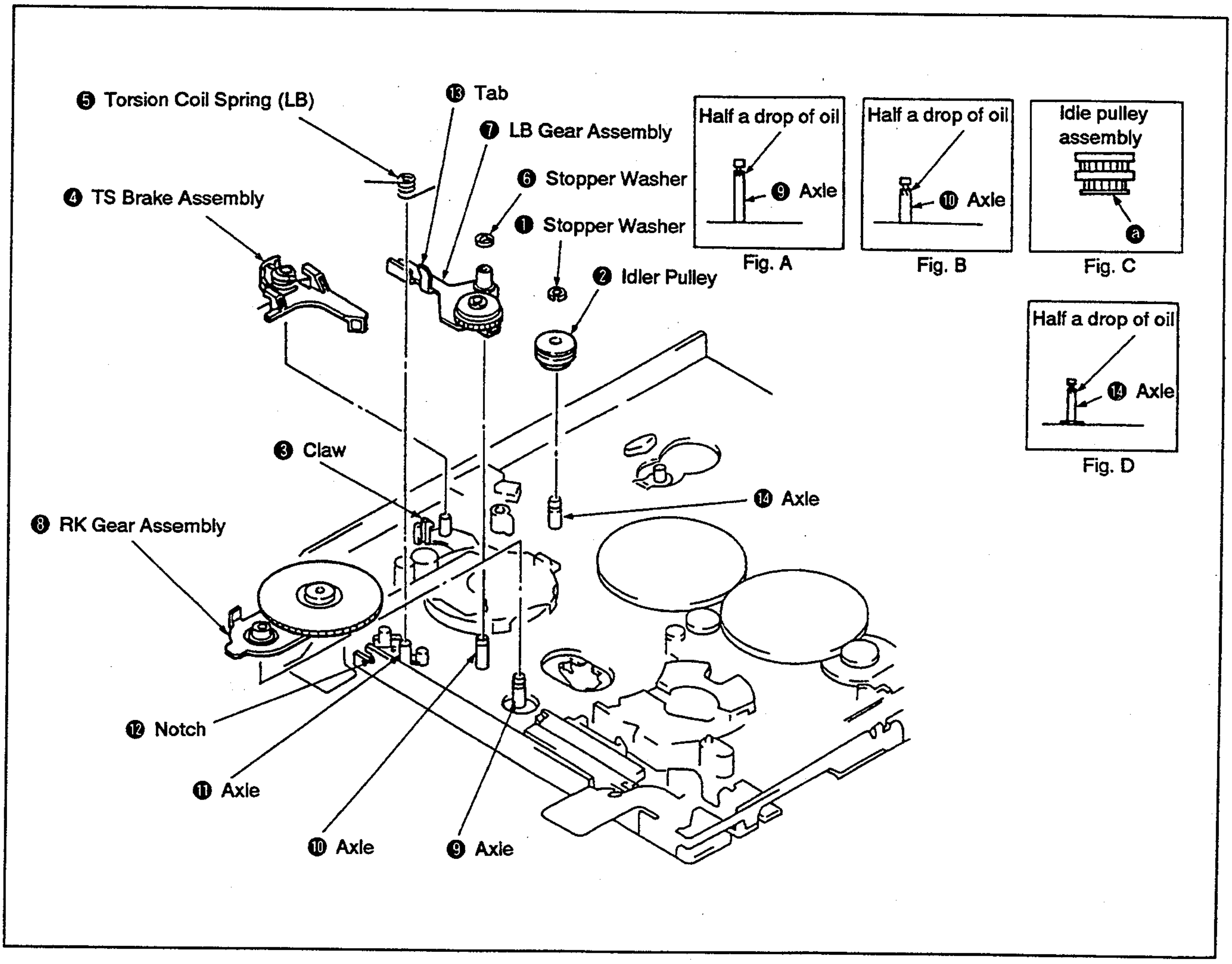

❺ Torsion Coil Spring (LB)
⓭ Tab
❼ LB Gear Assembly
❻ Stopper Washer
❹ TS Brake Assembly
❶ Stopper Washer
❷ Idler Pulley
❸ Claw
⓮ Axle
❽ RK Gear Assembly
⓬ Notch
⓫ Axle
❿ Axle
❾ Axle
Half a drop of oil
❾ Axle
Half a drop of oil
❿ Axle
Idle pulley assembly
ⓐ
Half a drop of oil
⓮ Axle

Fig. A

Fig. B

Fig. C

Fig. D

Fig. 3-17.

## 3-17. UL GEAR, UL BRAKE, UL ARM, LB PLATE SPRING

### 1. Removal (See Fig. 3-18.)

1) Remove the switch lever assembly as described in section 3-14.
2) Remove the stopper washer ❶ , then remove the UL gear ❷.
3) Remove the UL arm ❸ , the 1.6 mm-diameter poly washer ❹ and the LB plate spring ❺.
4) Remove the UL brake ❻.

### 2. Installation (See Fig. 3-18.)

1) Mount the UL brake ❻.
2) Apply half a drop of oil to the axle ❼ (See Fig. A).
3) Mount the LB plate spring ❺ to the axle ❼ as shown in Fig. B, then install the 1.6mm-diameter poly washer ❹.
4) Mount the UL arm ❸ to the axle ❼ so that the protrusion ❽ comes into the groove ❾ of the UL brake ❻.
5) Mount the UL gear ❷ to the axle ❼ and engage it with the gear of the drive gear (left) assembly ❿.
6) Install the stopper washer ❶.
7) Mount the switch lever assembly as described in section 3-14.

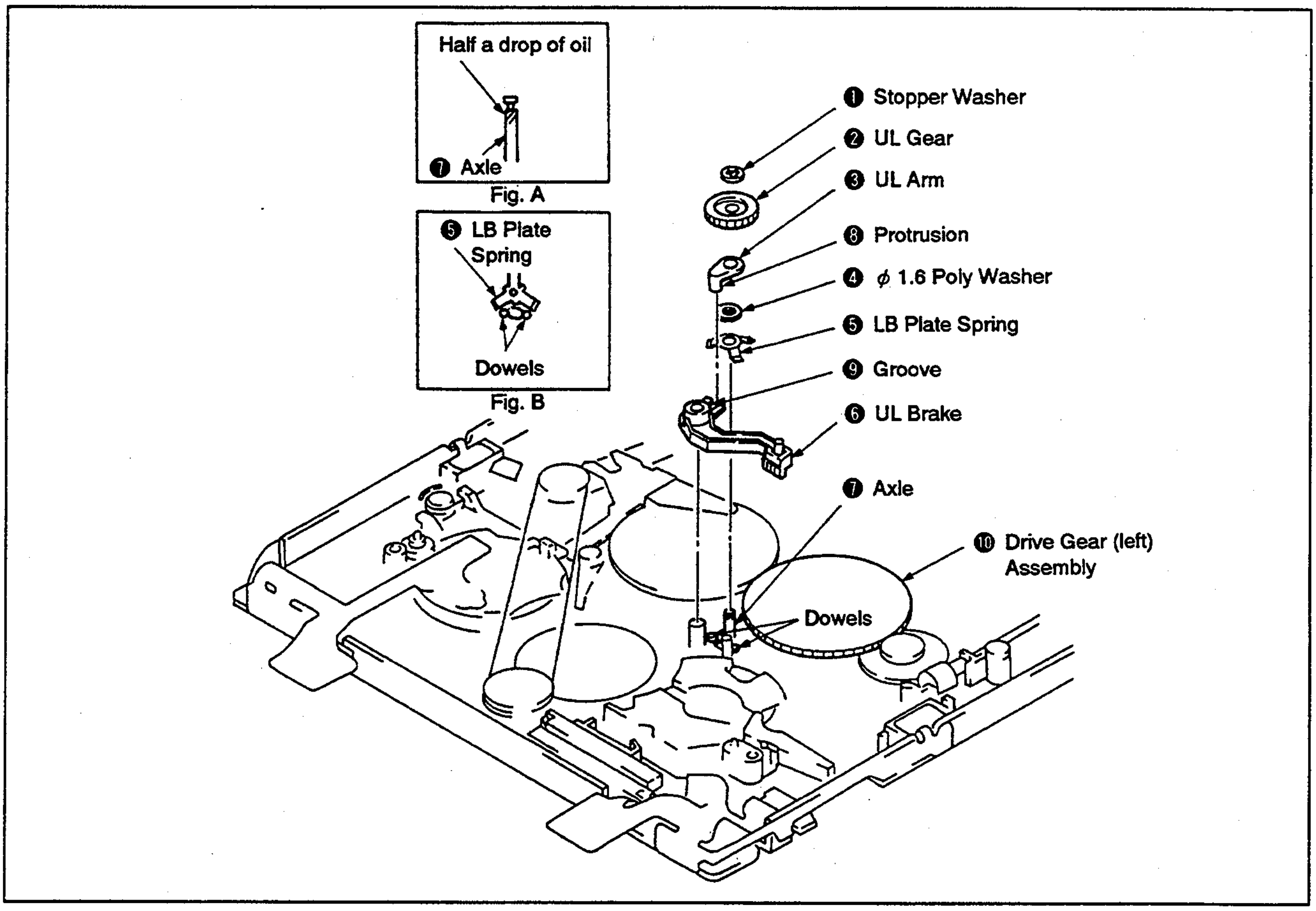

Half a drop of oil
❼ Axle
Fig. A
❺ LB Plate Spring
Dowels
Fig. B
❶ Stopper Washer
❷ UL Gear
❸ UL Arm
❽ Protrusion
❹ ϕ 1.6 Poly Washer
❺ LB Plate Spring
❾ Groove
❻ UL Brake
❼ Axle
❿ Drive Gear (left) Assembly
Dowels

Fig. 3-18.

## 3-18. COASTER (RIGHT) ASSEMBLY, DRIVE GEAR (RIGHT) ASSEMBLY

### 1. Removal (See Fig. 3-19.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the drum unit as described in section 3-13.
3) Remove the switch lever assembly as described in section 3-14.
4) Remove the timing belt (L) , the RC gear assembly and the loading lever assembly as described in section 3-15.
5) Set the STOP mode.
6) Remove the screw ❶ , then remove the coaster plate spring ❷ and the coaster (right) assembly ❸ .
7) Remove the two screws ❹ , then remove the reinforcing plate TT ❺ .
8) Remove the stopper washer 1.5 ❻ , then remove the drive gear (right) assembly ❼ .

### 2. Installation (See Fig. 3-19.)

1) Grease the points of the mechanism chassis shown in Fig A.
2) Apply half a drop of oil to the axle ❽ (See Fig. F).
3) Grease pin ❾ , axle ❿ and dowel ⓯ of the coaster (right) assembly ❸ (See Fig. D).
4) Mount by aligning the pin ❾ and the axle ❿ with the slot ⓫ of the mechanism chassis.
5) Move the brake release arm ⓬ in the direction of the arrow Ⓐ to put it out of the way.
6) Mount the drive gear (right) assembly ❼ to the axle ❽ , and engage it with the drive gear (left) assembly ⓭ as shown in Fig. B.
7) Align the ⓐ part with the ⓑ part, and the hole ⓮ with the pin ❾ of the coaster (right) assembly ❸ .
8) Install the stopper washer 1.5 ❻ .
9) Mount by aligning the coaster plate spring ❷ with the axle ❿ of the coaster (right) assembly ❸ and pin ❾ , then secure with the screw ❶ .
10) Mount the reinforcing plate TT ❺ aligning it with the dowel ⓯ , then tighten the two screws ❹ in the indicated order.
11) Grease the points indicated in Figs. C and E.
12) Mount the timing belt (L) , the RC gear assembly and the loading lever assembly as described in section 3-15.
13) Mount the switch lever assembly as described in section 3-14.
14) Mount the drum unit as described in section 3-13.
15) Mount the DC motor (capstan motor) as described in section 3-3.

**Note:**
- Screw ❶ should be tightened with a tightening torque of approx. 500g•cm. If tightened too much, the coaster (right) assembly ❸ and the coaster plate spring ❷ will be deformed.
- After installing, be sure to perform tape path adjustment as described in section 4.

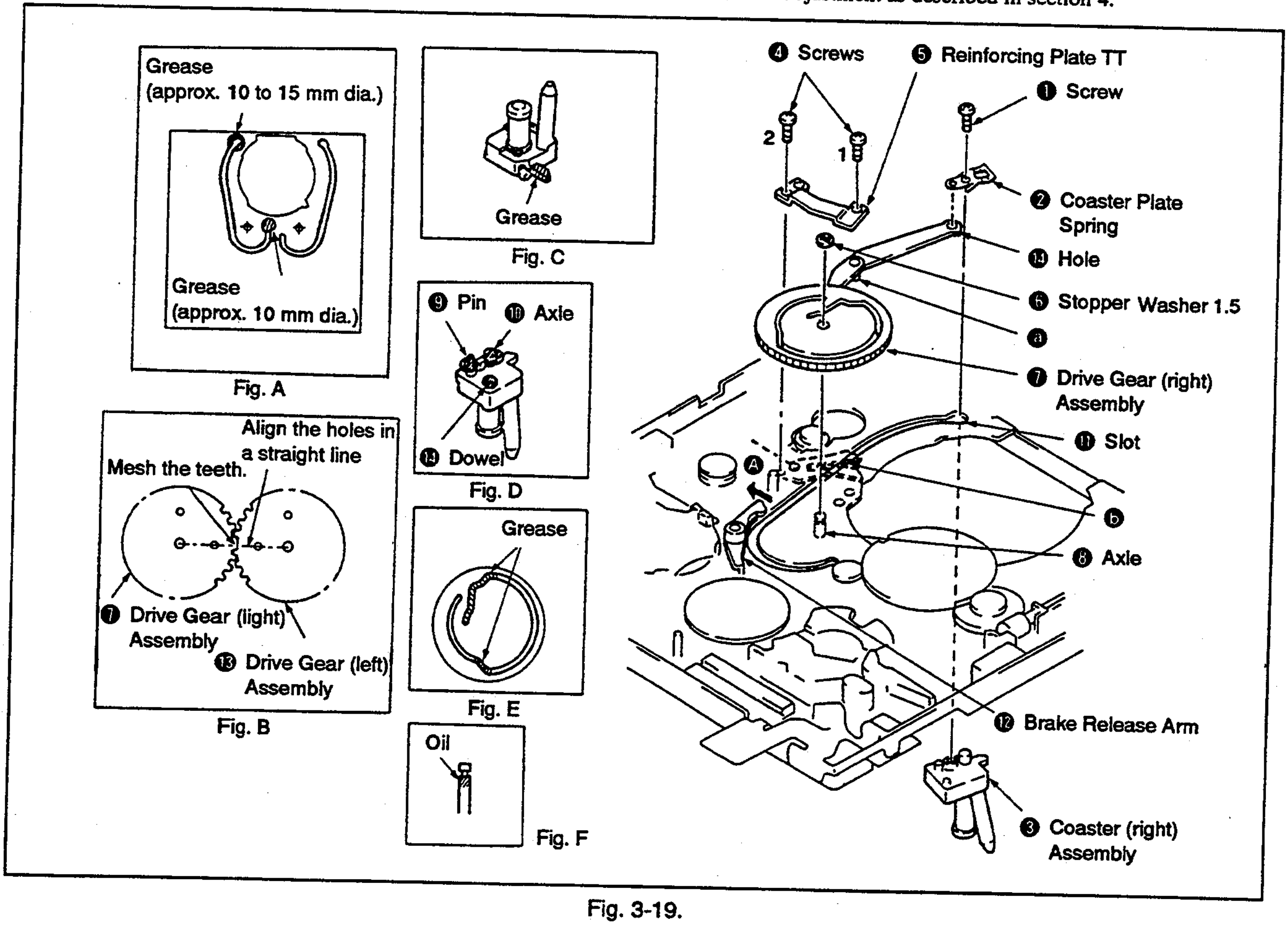

Grease
(approx. 10 to 15 mm dia.)
Grease
(approx. 10 mm dia.)
Grease
❾ Pin
❿ Axle
⓯ Dowel
Grease
Oil
Align the holes in a straight line
Mesh the teeth.
❼ Drive Gear (light) Assembly
⓭ Drive Gear (left) Assembly
❹ Screws
❺ Reinforcing Plate TT
❶ Screw
2
1
❷ Coaster Plate Spring
⓮ Hole
❻ Stopper Washer 1.5
ⓐ
❼ Drive Gear (right) Assembly
⓫ Slot
Ⓐ
ⓑ
❽ Axle
⓬ Brake Release Arm
❸ Coaster (right) Assembly

Fig. A

Fig. B

Fig. C

Fig. D

Fig. E

Fig. F

Fig. 3-19.

## 3-19. COASTER (LEFT) ASSEMBLY, DRIVE GEAR (LEFT) ASSEMBLY

### 1. Removal (See Fig. 3-20.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the drum assembly as described in section 3-13.
3) Remove the switch lever assembly and the pinch roller sub-arm assembly as described in section 3-14.
4) Remove the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
5) Remove the coaster (right) assembly and the drive gear (right)assembly as described in section 3-18.
6) Remove the screw ❶, then remove the coaster plate spring ❷ and the coaster (left) assembly ❸.
7) Remove the two screws ❹, then remove the reinforcing plate SS assembly ❺.
8) Remove the stopper washer 1.5 ❻, then remove the drive gear (left) assembly ❼.

### 2. Installation (See Fig. 3-20.)

1) Grease the points of the mechanism chassis shown in Fig A.
2) Apply half a drop of oil to the axle ❽ (See Fig. E).
3) Grease pin ❾, axle ❿ and dowel ⓰ of the coaster (left) assembly ❸ (See Fig. B).
4) Mount by aligning the pin ❾ and the axle ❿ with the slot ⓫ of the mechanism chassis.
5) Fit the drive gear (left) assembly ❼ to the axle ❽, and mount so that the gear engages with the wheel gear ⓭ and the UL gear ⓮.
6) Align the ⓐ part with the slot ⓫, and the hole ⓮ with the pin ❾ of the coaster (left) assembly ❸.
7) Install the stopper washer 1.5 ❻.
8) Mount by aligning the coaster plate spring ❷ with the axle ❿ and pin ❾ of the coaster (left) assembly ❸, then secure with the screw ❶.
9) Mount the reinforcing plate SS assembly ❺ aligning it with the dowel ⓯, then tighten the two screws ❹ in the indicated order.
10) Grease points indicated in Figs. C and D.
11) Mount the coaster (right) assembly and the drive gear (right)assembly as described in section 3-18.
12) Mount the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
13) Mount the switch lever assembly and the pinch roller sub arm assembly as described in section 3-14.
14) Mount the drum assembly as described in section 3-13.
15) Mount the DC motor (capstan motor) as described in section 3-3.

**Note:**
- Screw ❶ should be tightened with a tightening torque of approx. 500g•cm. If tightened too much, the coaster (right) assembly ❸ and the coaster plate spring ❷ will be deformed.
- After installing, be sure to perform tape path adjustment as described in section 4.

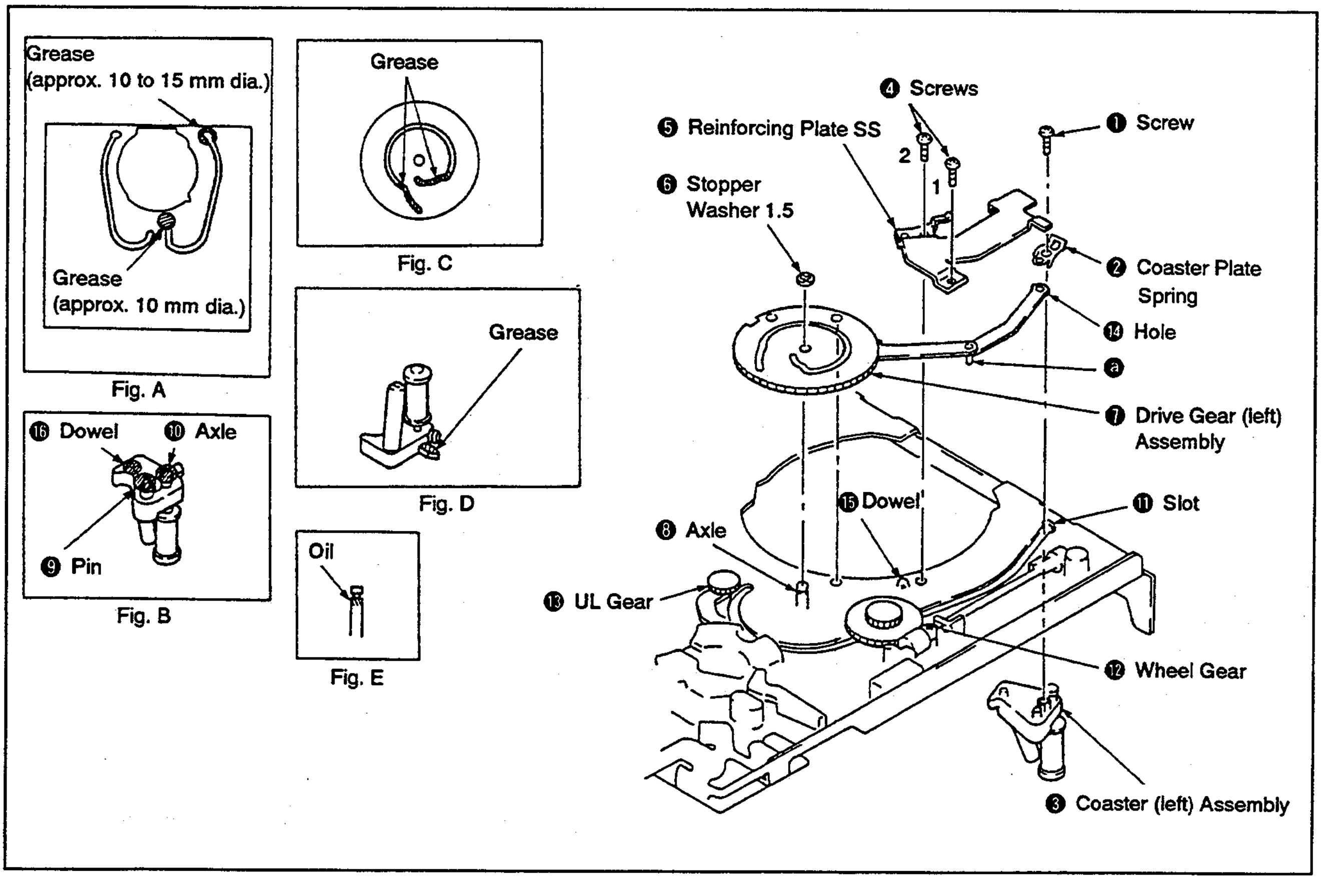

Grease
(approx. 10 to 15 mm dia.)
Grease
(approx. 10 mm dia.)
Fig. A
⓰ Dowel
❿ Axle
❾ Pin
Fig. B
Grease
Fig. C
Grease
Fig. D
Oil
Fig. E
❹ Screws
❺ Reinforcing Plate SS
2
1
❶ Screw
❻ Stopper
Washer 1.5
❷ Coaster Plate
Spring
⓮ Hole
ⓐ
❼ Drive Gear (left)
Assembly
⓯ Dowel
⓫ Slot
❽ Axle
⓭ UL Gear
⓬ Wheel Gear
❸ Coaster (left) Assembly

Fig. 3-20.

## 3-20. LOADING MOTOR, BRAKE RELEASE ARM, WHEEL GEAR, WORM ASSEMBLY

### 1. Removal (See Fig. 3-21.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the switch lever assembly and the pinch roller sub arm assembly as described in section 3-14.
3) Remove the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
4) Remove the drive gear (right) assembly as described in section 3-18.
5) Remove the drive gear (left) assembly as described in section 3-19.
6) Remove the two screws ❶, then remove the loading motor assembly ❷.
7) Remove the brake release arm ❸.
8) Remove the stopper washer ❹, then remove the wheel gear ❺.
9) Remove the worm assembly ❻ from the six claws ❼.

### 2. Installation (See Fig. 3-21.)

1) Mount the worm assembly ❻, matching it to the six claws ❼.
2) Grease the shaded parts of the worm assembly ❻ (five places) (see Fig A).
3) Apply half a drop of oil to the axle ❽ (See Fig. B).
4) Fit the wheel gear ❺ to the axle ❽ and engage it with the gear of the worm assembly ❻.
5) Mount the brake release arm ❸.
6) Grease the whole perimeter of the gear of the loading motor assembly ❷.
7) Align the loading motor assembly ❷ with the mechanism chassis and secure it with the two screws ❷.
8) Mount the drive gear (left) assembly as described in section 3-19.
9) Mount the drive gear (right) assembly as described in section 3-18.
10) Mount the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
11) Mount the switch lever assembly and the pinch roller sub arm assembly as described in section 3-14.
12) Mount the DC motor (capstan motor) as described in section 3-3.

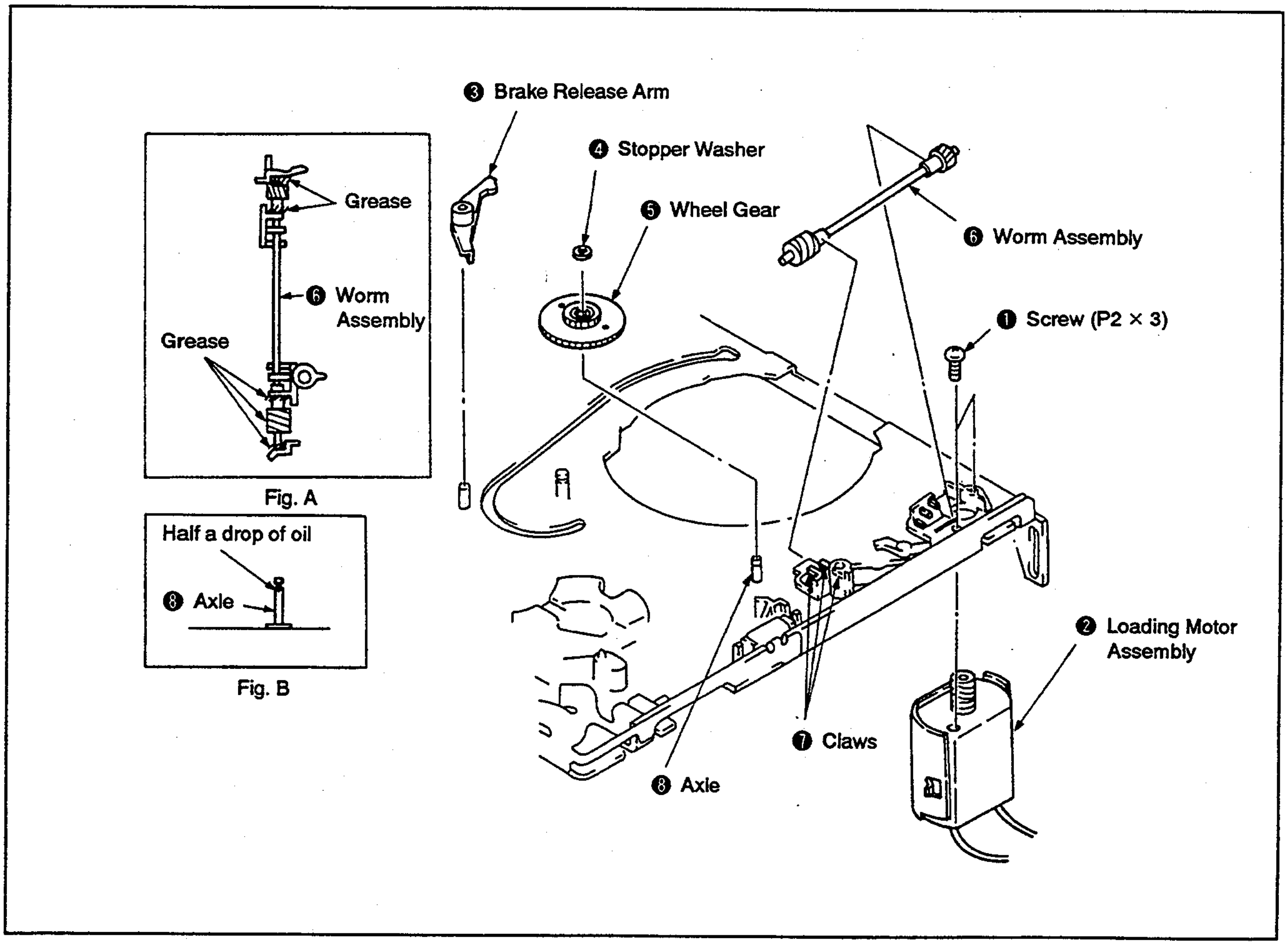

❸ Brake Release Arm
❹ Stopper Washer
❺ Wheel Gear
❻ Worm Assembly
❶ Screw (P2 × 3)
❷ Loading Motor Assembly
❼ Claws
❽ Axle
Grease
❻ Worm Assembly
Grease
Fig. A
Half a drop of oil
❽ Axle
Fig. B

Fig. 3-21.

## 3-21. ROTARY UPPER DRUM REPLACEMENT

### 1. Removal

- If possible, make a recording before removal.

1) Detach the six solderings ⓐ, then use a pair of tweezers or the like to confirm that the terminals passing through the board holes from below can move freely.
2) Remove the two screws ❶ (See Fig. 3-22).
3) Mount the jig ❹ (Ref. No. J-7) with the two supplied screws ❷, then screw the attached hexagon socket screws ❸ to the jig ❹. The rotary upper drum ❺ will move upward and come off (See Fig. 3-23).

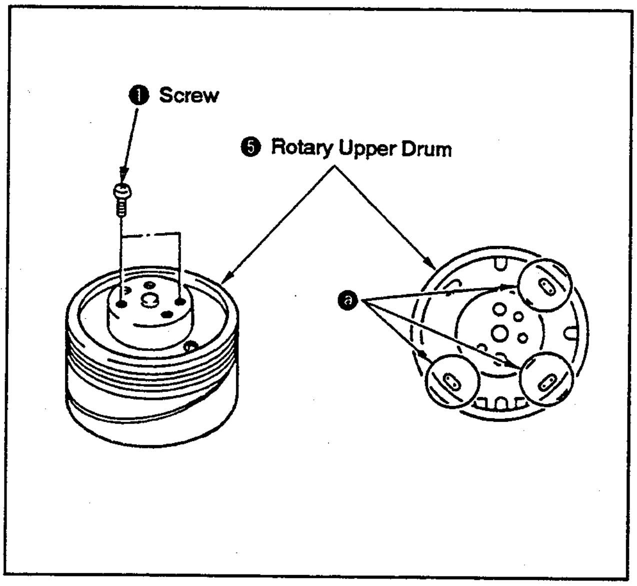


Fig. 3-22.

### 2. Installation

1) Wipe clean the flange surface and the rotary upper drum ❺ surface that makes contact with it, and confirm that they are free from dirt and scratches.
2) Insert the jig ❼ (Ref. No. J-7) into the drum positioning hole, then set the rotary upper drum ❺ by passing the jig through its positioning hole ❻.
   **Note:** Confirm that the terminals ❽ protrude slightly from the rotary upper drum board holes (See Fig. 3-24).
3) Remove the jig ❼ and push down the rotary upper drum ❺ gently by hand. If it does not go all the way down, secure it temporarily by tightening the two hexagon socket screws ❶ alternately.
4) Insert the jig ❼ into the positioning hole ❻ again and confirm that it goes in smoothly. If it does not, loosen the two screws ❶, repeat step 3 of the Removal paragraph and restart the setting procedure.
5) Tighten the screws ❶.
6) Solder the terminals ❽ (ⓐ in Fig. 3-22).
   **Note:** Take care that no solder flows below the board.

**Note:** After installing, be sure to perform tape path adjustment as described in section 4.

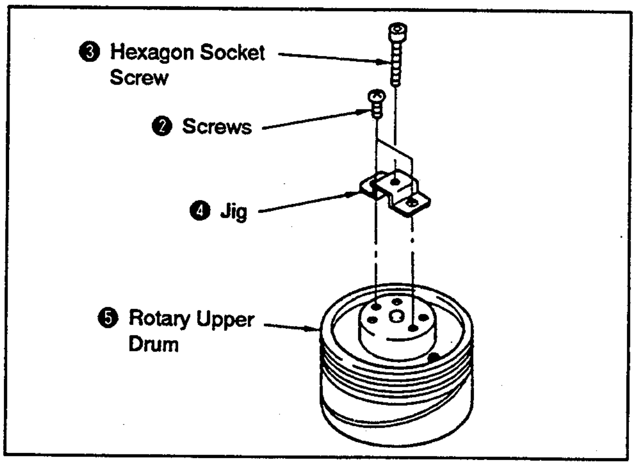


Fig. 3-23.

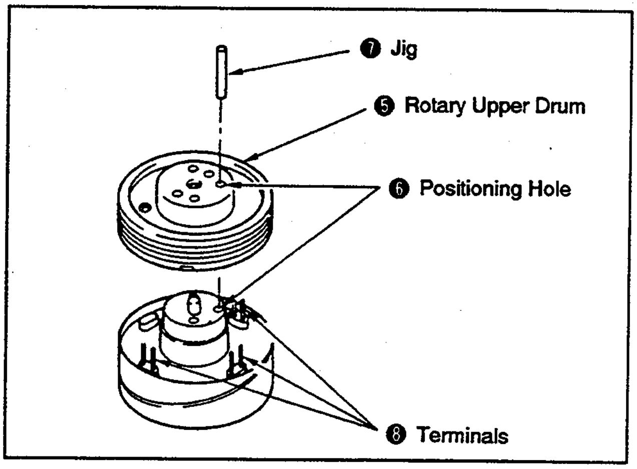


Fig. 3-24.

## 3-22. FWD BACK TENSION (See Fig. 3-25.)

1) Set the torque cassette (Ref. No. J-6).
2) Set the FWD mode and confirm that S reel table torque value is within 9 to 13 g•cm.
3) If the torque value does not meet the specification, adjust the adjust arm ❶.

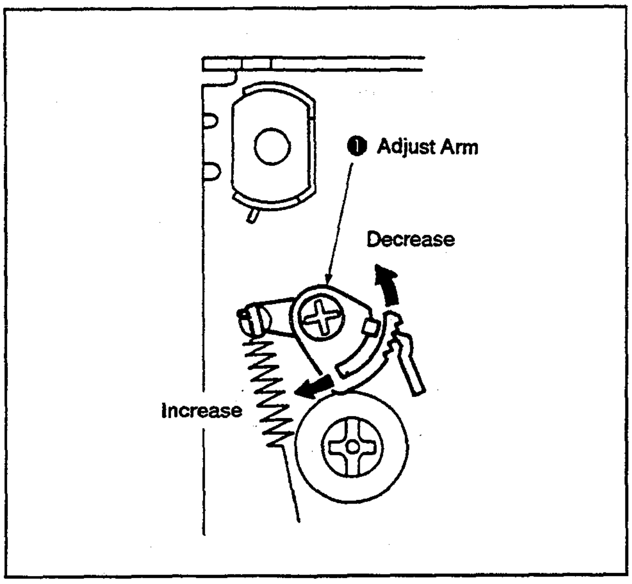


Fig. 3-25.

## 3-23. REEL TORQUE CHECK

1) Set the torque cassette.
2) Set the FWD mode and confirm that T reel table torque value is within 7 to 15 g•cm.
3) Set the REV mode and confirm that S reel table torque value is within 29 ± 6 g•cm.
4) Set the REV mode and confirm that T reel table torque value is within 13 to 25 g•cm.
5) If a torque value does not meet the specifications above, replace the corresponding reel table.

## 4. TAPE PATH ADJUSTMENT

**[The Track Shift Mode]**

In the 8 mm video system, instantaneous tape speed control is performed using four kinds of pilot signals, and high-precision tracking is achieved through the ATF (Automatic Track Finding) system. This makes a tracking control knob unnecessary and allows for precise tracing.

On the other hand, however, tape path adjustment presents some difficulties when the ATF system is used. Namely, since the ATF system will automatically compensate to some degree for head tracing errors, thorough adjustment is not possible.

This can be solved by setting the track shift mode for tracking fine adjustment. ATF will be compulsorily activated, shifting the tracking amount by a fixed amount (approx. 1/4) and thus making tracking fine adjustment easy. Furthermore, no track shift jigs are required.

### 4-1. TRACK SHIFT MODE SETTING

**[Setting Procedure]**

- Connect the TEST A and TEST B terminals to the COM terminal.

  Example:

  NTSC ········ GV-8

  PAL ·········· GV-8E

  Connect Pins ① and pin ③ of CN017 on the $\left\{\begin{array}{l}\text{SV-34 board (GV-8)}\\\text{SV-35 board (GV-8E)}\end{array}\right\}$ to pin ② of it. (See Fig. 4-1)

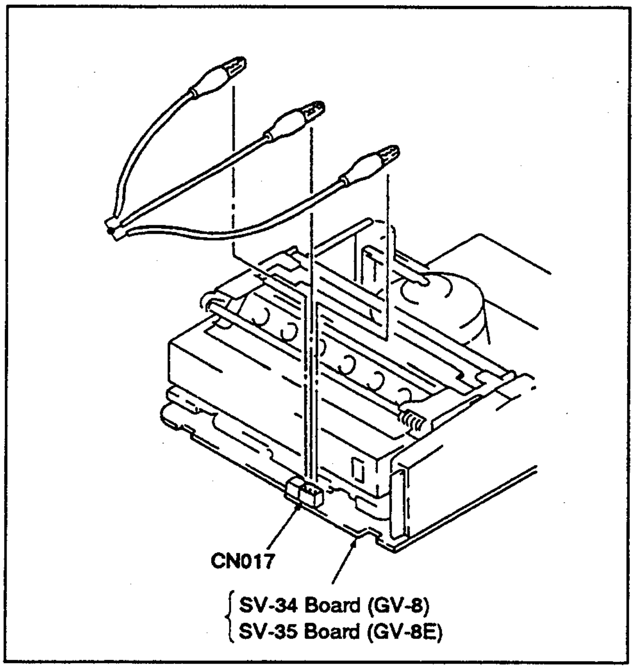
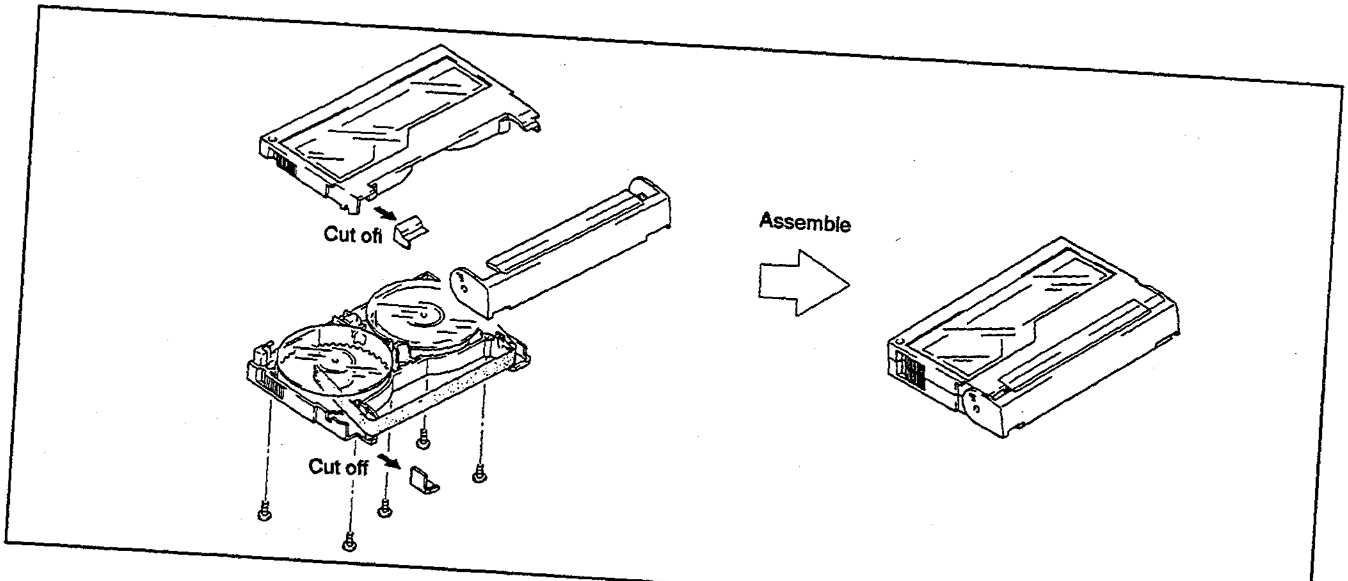


Fig. 4-1.

### [Note on Adjustment of No.7 Guide (TG-7)]

The height adjustment screw for No.7 guide (TG-7) is located at some distance from the guide (refer to Fig. 4-2).
Therefore, when performing section 4-6. No.7 Guide (TG-7) Adjustment it is convenient to use the alignment tape for tracking (Ref. No. J-5), modified as follows, and perform adjustment in playback mode.


Cut off
Cut off
Assemble

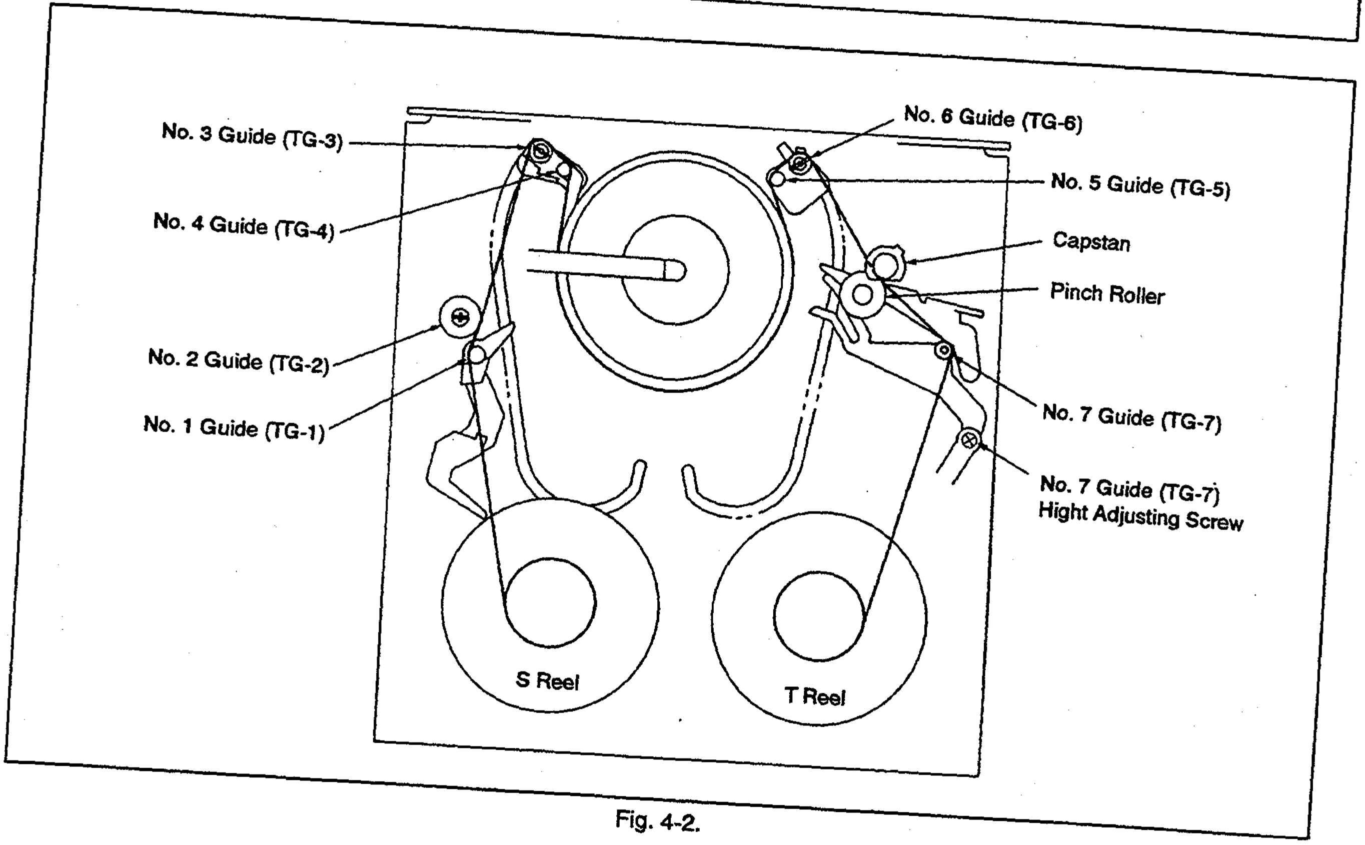

No. 3 Guide (TG-3)
No. 4 Guide (TG-4)
No. 2 Guide (TG-2)
No. 1 Guide (TG-1)
No. 6 Guide (TG-6)
No. 5 Guide (TG-5)
Capstan
Pinch Roller
No. 7 Guide (TG-7)
No. 7 Guide (TG-7)
Hight Adjusting Screw
S Reel
T Reel

Fig. 4-2.

## 4-2. PREPARATIONS FOR ADJUSTMENT

1) Clean tape path surfaces (tape guides, drum, capstan shaft, pinch roller) (See Fig. 4-2).
2) Connection of oscilloscope and output method of waveform.
   CH 1: RF signal output of the drum head (V RF OUT)
   Method for signal output:
   Short-circuit the external trigger output (RF SW. P) and GND.

   Example:
   NTSC ····· GV-8
   PAL ······· GV-8E
   CH 1: Pin ③ (V RF OUT) of CN018 on the
   SV-34 board (GV-8)
   SV-35 board (GV-8E)
   Method for signal output:
   Short-circuit pin ① (GND) and pin ② (RF SW.P) of CN018 on the
   SV-34 board (GV-8)
   SV-35 board (GV-8E)
3) Play back the alignment tape for tracking adjustment (Ref. No. J-5).
4) Confirm that both the entrance and exit side RF waveforms of the oscilloscope are flat (See Fig. 4-4). If they are not, adjust as follows.

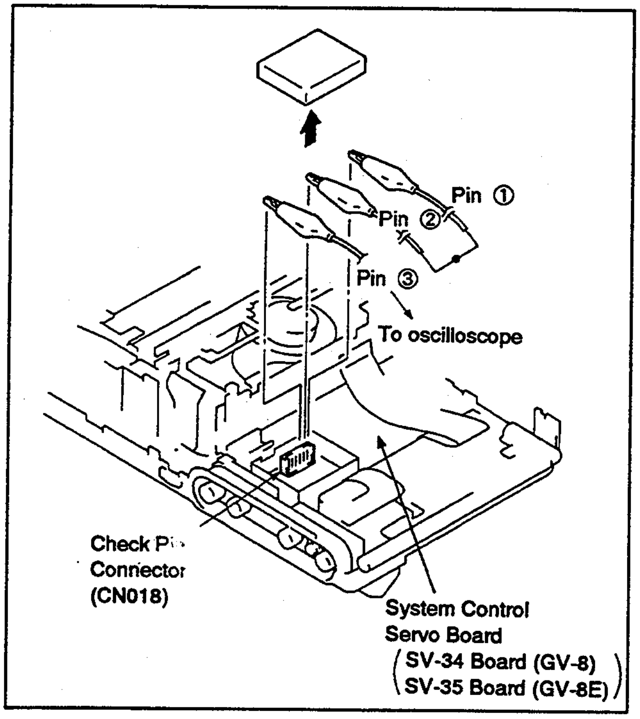

Pin ①
Pin ②
Pin ③
To oscilloscope
Check Pin Connector (CN018)
System Control Servo Board
SV-34 Board (GV-8)
SV-35 Board (GV-8E)

Fig. 4-3.

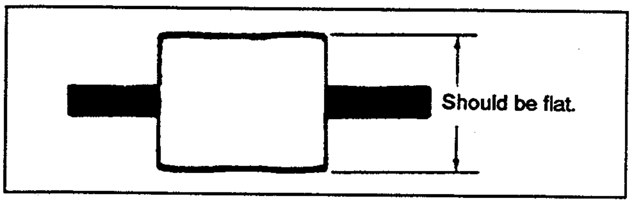

Should be flat.

Fig. 4-4.

## 4-3. TRACKING ADJUSTMENT (See Fig. 4-5.)

1) Play back the alignment tape for tracking adjustment.
2) Pass a hexagonal wrench, screwdriver (Ref. No. J-11) or the like through the hole ❶, loosen the lockscrew ❷ a little, then make the entrance side waveform flat by turning the No. 3 guide (TG-3) ❸.
3) Pass a hexagonal wrench, screwdriver or the like through the hole ❹, loosen the lockscrew ❺ a little, then make the exit side waveform flat by turning the No. 6 guide (TG-6) ❻.

**Note:** Take care not to loosen lockscrews too much, since guides come loose easily.

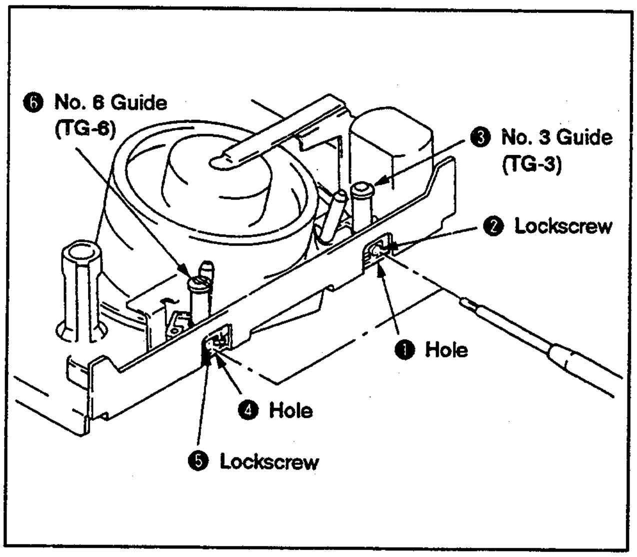

❻ No. 6 Guide (TG-6)
❸ No. 3 Guide (TG-3)
❷ Lockscrew
❶ Hole
❹ Hole
❺ Lockscrew

Fig. 4-5.

## 4-4. TRACKING FINE ADJUSTMENT
(See Figs. 4-5. and 4-6.)

1) Play back the alignment tape for tracking adjustment and set the track shift mode.
2) Confirm whether the waveform is flat. If it is not, turn the No. 3 (TG-3) and No. 6 (TG-6) guides so that it becomes flat.
3) Fix the No. 3 guide ❸ by tightening its lockscrew ❷. Then confirm that the entrance side waveform has not changed.
4) Fix the No. 6 guide ❻ by tightening its lockscrew ❺. Then confirm that the exit side waveform has not changed.

**Note:** The set screws ❷ and ❺ should be tightened with a tightening torgue of approx. 200g•cm ± 10%.
If tightened too much, there is danger of damaging the thread.

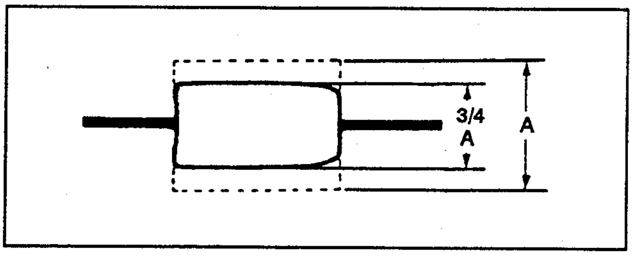


Fig. 4-6.

## 4-5. No. 2 GUIDE (TG-2) ADJUSTMENT

When the No. 2 guide has been turned or replaced, perform height presetting before this adjustment.

### 4-5-1. No. 2 Guide (TG-2) Height Presetting
(See Fig. 4-7.)

1) Adjust the height from the mechanism chassis upper surface to the TG-2 upper flange ❶ upper surface to 18.6 mm by rotating the TG-2 upper flange ❶.

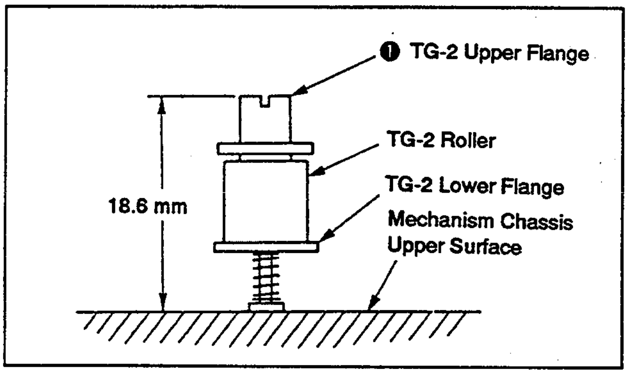


Fig. 4-7.

**[Reference]**
This U mechanism is equipped with four adjustable guides (TG-2, 3, 6 and 7) . To raise or lower the respective guide rotate the corresponding adjustment screw as shown below.

| Guide | Guide adjustment | Rotating direction of adjustment screw |
|---|---|---|
| TG-2, 3, 6 | Raise | Counterclockwise |
| | Lower | Clockwise |
| TG-7 | Raise | Counterclockwise |
| | Lower | Clockwise |

### 4-5-2. No. 2 Guide (TG-2) Adjustment (See Figs. 4-8. and 4-9.)

1) Play back a thin tape like the P6-120MP, etc. and set the REV mode.
2) Confirm that the tape is not bent at the lower flange ❷ of the No. 2 guide (TG-2) ❶ (See Fig. 4-8). If it is, turn the upper flange ❸ of the No. 2 guide (TG-2) ❶ clockwise with a screwdriver, lowering it until the tape is straightened.
3) Play back the alignment tape for tracking adjustment.
4) Perform tracking adjustment and tracking fine adjustment as described in sections 4-3. and 4-4.
5) In the track shift mode, CUE/REV the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds.
6) If the waveform is not normal (See Fig. 4-9), turn the upper flange ❸ of the No. 2 guide (TG-2) ❶ 90° counter-clockwise and repeat step 5.
   Repeat steps 5 and 6 until a normal waveform is obtained. Then, confirm that the tracking waveform has not changed. If it has, perform fine adjustment of entrance side tracking and repeat step 5.

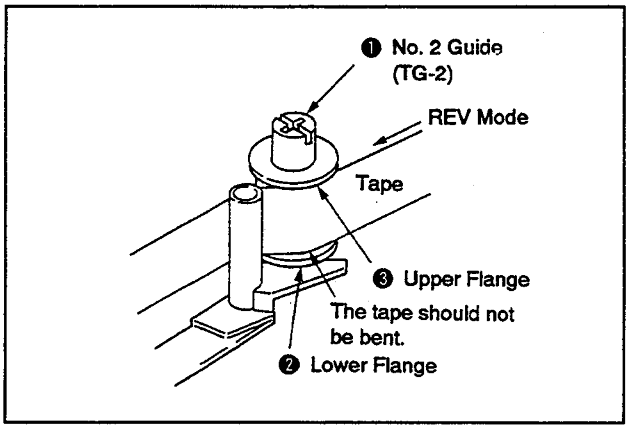

❶ No. 2 Guide (TG-2)
REV Mode
Tape
❸ Upper Flange
The tape should not be bent.
❷ Lower Flange

Fig. 4-8.

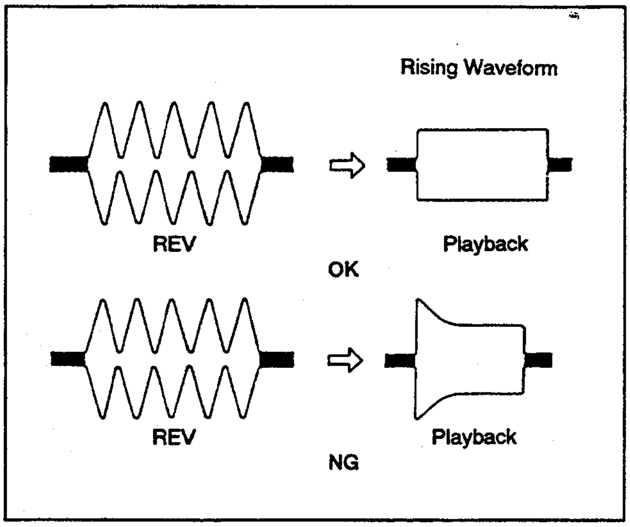

Rising Waveform
REV
Playback
OK
REV
Playback
NG

Fig. 4-9.

### 4-6. No. 7 GUIDE (TG-7) ADJUSTMENT (See Fig. 4-10.)

1) Play back the alignment tape for tracking adjustment and set the REV mode.
2) Confirm that the tape is not bent between the No. 6 guide (TG-6) ❶ and the capstan ❷ . If it is, turn the hight adjusting screw ❹ of the No. 7 guide (TG-7) ❸ until the tape is straightened.
3) Set the playback mode again and confirm that the tape is not bent between the capstan ❷ and the hight adjusting screw ❹ of the No. 7 guide (specification:0.5 mm or less) . If the tape is bent beyond the specification, turn the No. 7 guide (TG-7) ❸ until bending is within the specification (0.5 mm).
   If in the REV mode tape bending between the No. 6 guide (TG-6) ❶ and the capstan ❷ is 0.3 mm or less, adjustment can be considered completed.

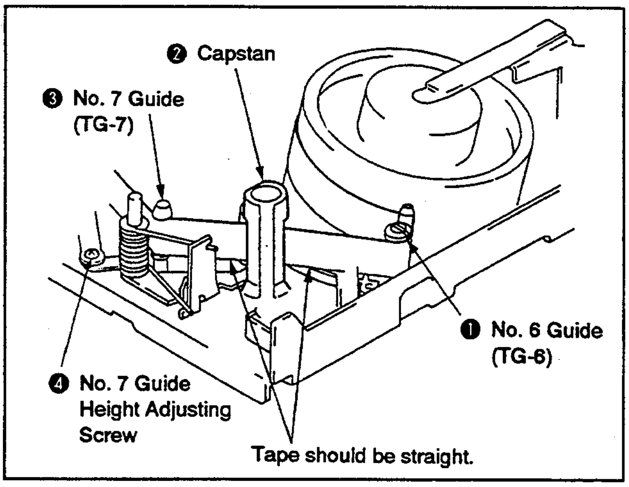

❷ Capstan
❸ No. 7 Guide (TG-7)
❶ No. 6 Guide (TG-6)
❹ No. 7 Guide Height Adjusting Screw
Tape should be straight.

Fig. 4-10.

## 4-7. CUE AND REV WAVEFORM CHECK (See Fig. 4-11.)

1) Play back the alignment tape for tracking adjustment and set the REV mode. Confirm that waveform peaks maintain a constant pitch of 5 seconds or more (See Fig. 4-11). In case pitch is not constant, perform section 4-4. Tracking Fine Adjustment and section 4-6. No. 7 Guide Adjustment.
2) Set the CUE mode. Confirm that waveform peaks still maintain a constant pitch of 5 seconds or more (See Fig. 4-11). Otherwise, perform section 4-4. Tracking Fine Adjustment.

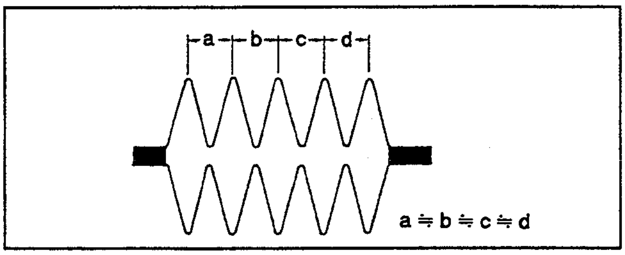


Fig. 4-11.

## 4-8. CHECK AFTER ADJUSTMENT

### 4-8-1. Tracking Check

1) Confirm that the amplitude of RF waveform is reduced to approx. 3/4 when the track shift mode is set (See Fig. 4-12).
2) Then, confirm that the minimum amplitude value (EMIN) is 65% of the maximum value (EMAX) or larger (See Fig. 4-13).
3) Confirm that no large fluctuations occur on the waveform (See Fig. 4-14).

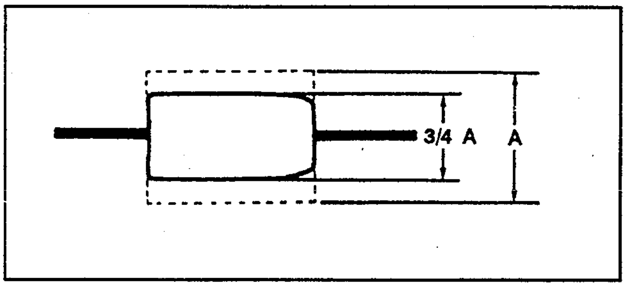


Fig. 4-12.

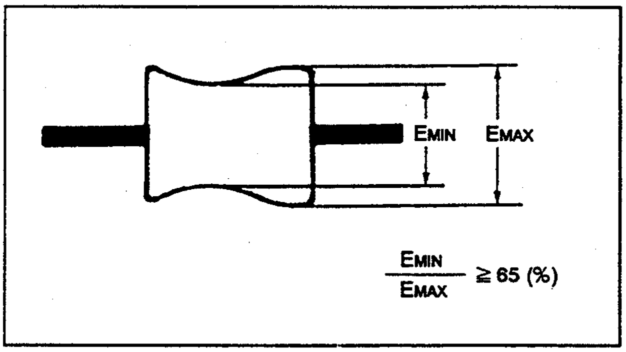


Fig. 4-13.

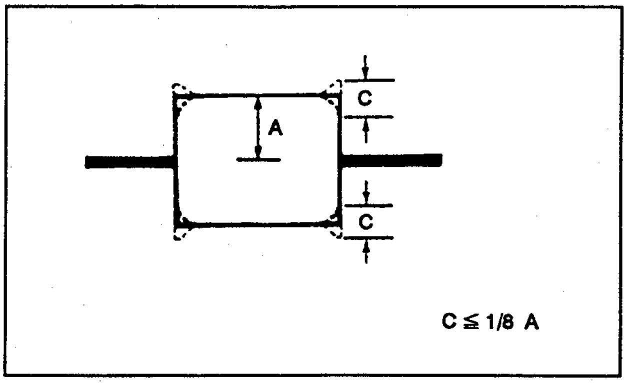
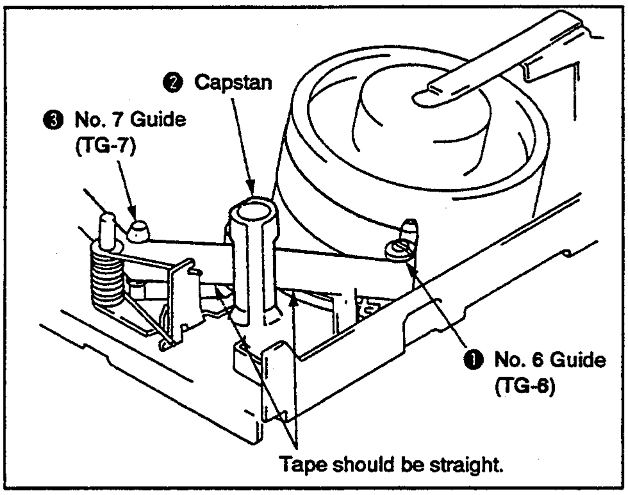


Fig. 4-14.

### 4-8-2. Rising Check (See Fig. 4-15.)

1) Play back the alignment tape for tracking adjustment.
2) Cancel the track shift mode.
3) Eject the tape, then load it again.
4) Set the playback mode and confirm that the RF waveform rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller (See Fig. 4-15).
5) CUE/REV and FF/REW the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
6) Repeat steps 3) to 5) once more.

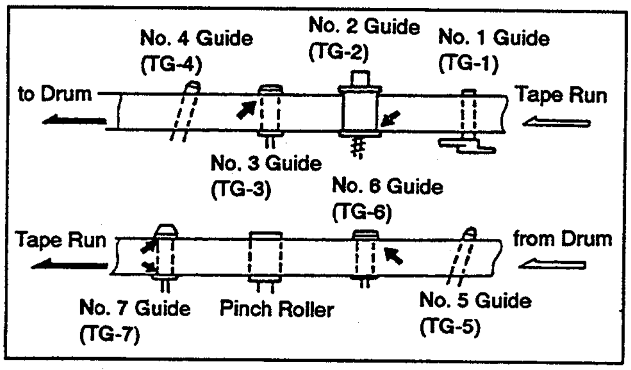


❷ Capstan
❸ No. 7 Guide (TG-7)
❶ No. 6 Guide (TG-6)
Tape should be straight.

Fig. 4-15.

### 4-8-3. Tape Path Check (See Fig. 4-16.)

1) Play back a thin tape like the P6-120MP (NTSC) or P5-90MP (PAL), etc. and confirm that no tape rising occurs, and that curling is less than 0.3 mm, at the lower flange of the No. 2 guide, the upper flange of the No. 3 guide, the upper flange of the No. 6 guide and the No. 7 guide upper and lower flanges.
2) Confirm that no tape rising occurs and that curling is less than 0.3 mm at the flanges of all guide when pressing the FF button in the playback mode to set the CUE mode, or the REW button to set the REV mode.



No. 4 Guide (TG-4)
No. 2 Guide (TG-2)
No. 1 Guide (TG-1)
to Drum
Tape Run
No. 3 Guide (TG-3)
No. 6 Guide (TG-6)
Tape Run
from Drum
No. 7 Guide (TG-7)
Pinch Roller
No. 5 Guide (TG-5)

Fig. 4-16.